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ABSTRACT

This guide provides basic information on the development, observation, and teaching of basic language, visual-perceptual-motor, and body awareness and control skills to disadvantaged children. It is presented in three sections devoted to specific analyses of how skills develop within each of three modalities, and how to observe and teach children to be more effective information processors in the specific modality under consideration. Such discussion is intended to provide the teacher with the information necessary to understand the overall level of functioning of a class of children, as well as each particular child's pattern of skills. This facilitates the organization of a general teaching program and the individualization of the program to the needs of the group and to those of particular children. (JM)

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A PSYCHONEUROLOGICALLY-ORIENTED CURRICULUM GUIDE FOR THE PRESCHOOL DISADVANTAGED CHILD*

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This Curriculum Guide provides basic information on the development, observation, and teaching of basic language, visual-perceptual-motor, and body awareness and control skills to disadvantaged children. It is an adjunct to the Physician and Educator Screening Test of Psychoneurological Efficiency developed under the same grant. The Screening Tests sample a child's input, integration and output skills in the above three information processing modalities and alert the physician and/or teacher to those children who may need further diagnostic workup and special programs in order to progress adequately in the Head Start classroom.

Both the Screening Test and the Curriculum Guide have the information processing model as their basis. As discussed in Hainsworth and Siqueland, (1968), Table 1 summarizes this composite information processing model. Information flows through the processes of orientation, intake, integration, output and feedback. This flow may occur within or between the three major modalities through which children are educated, i. e. the Visual-Perceptual-Motor, Language, and Body Awareness and Control. Children with psychoneurological inefficiencies usually break down in one or more of these five processes, within or across one or more of these three modalities.

This model helps demonstrate the sweep of information processing. First the child must focus his attention, select the appropriate cues from the background, and then retain the pattern and sequence of information taken in through the visual, auditory and kinesthetic discrimination of form-space-time cues. At higher levels of integration, the child must select the proper set for associating to and retrieving the relevant information before effective reasoning and category sorting processes can begin. To express the results of his problem solving, the child must select the appropriate response sequences for the outgoing information and execute various motor patterns in the eye-hand, speech articulation, or body control areas. Finally, he must continually monitor his efforts to make them relevant to the goals which he or his teacher or tester have set.

The two Screening tests provide the means whereby the Head Start physician and teacher jointly may survey the information processing skills of children between the ages of 4-6 and 7-5. Both assess children's skills in the Body Awareness and Control, Visual-Perceptual-Motor and Language modalities; the physician concentrates more on the underlying

TABLE 1: AN INFORMATION PROCESSING MODEL*

<table>
<tr><th></th><th>VISUAL-
PERCEPTUAL-MOTOR</th><th>LANGUAGE</th><th>BODY AWARENESS
AND CONTROL</th></tr>
<tr><td>ORIENTATION</td><td colspan="3">FOCUS OF ATTENTION
SELECTION OF APPROPRIATE CUES FROM BACKGROUND</td></tr>
<tr><td>INTAKE</td><td colspan="3">DISCRIMINATION OF FORM, SPACE AND TIME CUES</td></tr>
<tr><td></td><td>Visual</td><td>Auditory</td><td>Kinesthetic</td></tr>
<tr><td></td><td colspan="3">RETENTION OF PATTERN AND SEQUENCE OF INCOMING INFORMATION</td></tr>
<tr><td>INTEGRATION</td><td colspan="3">SET SELECTION
ASSOCIATION TO PREVIOUS LEARNING
RETRIEVAL OF RELEVANT INFORMATION</td></tr>
<tr><td></td><td colspan="3">SELECTION OF APPROPRIATE SEQUENCES FOR OUTGOING INFORMATION</td></tr>
<tr><td>OUTPUT</td><td colspan="3">EXECUTION OF PRECISE AND CONTROLLED MOVEMENT PATTERNS</td></tr>
<tr><td></td><td>Eye-Hand</td><td>Articulation</td><td>Body Control</td></tr>
<tr><td>FEEDBACK</td><td colspan="3">IMMEDIATE RESPONSE MONITORING
RELEVANCE OF RESPONSE TO OVERALL GOALS</td></tr>
</table>

*From Hainsworth & Siqueland, 1969 (page 6) sensory-motor skills and the teacher on the integrative and functional use of these skills. The following Curriculum Guide aids the teacher in handling the identified psychoneurologically inefficient children in a classroom setting by providing information on the development, observation and teaching of the skills in these three modalities.

Structuring the classroom environment to assist children to be more effective information processors or learners requires that careful attention be paid to what is presented in the classroom and how it is presented. One of the basic assumptions of this Curriculum Guide is that the teacher must understand the children's level of development in the above information processing modalities in order to match what she presents in the classroom to these levels of development and challenge the children to reach toward the next level. Since the main goal of the educational process is to encourage each child to be an independent learner in the group, this must be done within a group milieu. Further, the particular patterns of each child must be observed in some detail and the program individualized to meet his needs -- still within the group milieu.

To match the teaching program to the children's level of development, classroom observation or diagnosis of the children is interwoven with the development of teaching strategies and techniques, in a spiralling sequential manner. The teacher presents material to the children so that she can observe the group's functional level. Understanding the group's overall level in the three modalities then helps the teacher program her teaching materials so the children can learn effectively. Then, she observes (tests) whether they have, in fact, learned the material before she discontinues teaching this particular skill or concept. This is basically the test-teach-test-exit model advocated by Miller, Galanter and Pribram (1960). Although intimately interwoven and ongoing continually in the classroom, the diagnostic observationand teaching processes are discussed separately in the following sections and in the Curriculum Guide.

Diagnostic or Observational Process

The Physician and Educator screening tests are alerting devices to the teacher and physician that a child may be an inefficient learner because he is unable to use language, eye-hand (visual-perceptual-motor), and body awareness and gross motor information processing skills effectively. Inadequate performance indicates that this child should be studied intensively to assess body processes, intellectual processes, emotional process as well as more in-depth analysis of information processing skills. This is traditionally accomplished through the diagnostic batteries of the psychologist, special educator, pediatrician, neurologist, etc. However, the classroom situation itself can and should be used to gain more detailed information about children's functioning, particularly when the classroom environment is going to be used as a tool to help the children become more effective learners. This process can serve as a partial substitute for a further individual educational or psychological diagnostic workup or can be used in conjunction with same.

The children's response to the teaching program is studied first, in a general way, to learn more about their levels of behavioral and information processing skills. The purpose of such an analysis is to determine how to mass the general program and gear specific activity presentations to their skill levels. Then, finer and finer assessment of these same factors, as deemed necessary to understand each individual child's particular strengths and weaknesses, leads to finer and finer analysis of how to present information to each child within the group. Throughout the Curriculum Guide, there are diagnostic and observational schedules that can be utilized to look at the children's general response to program as well as to assess specific skills or problem areas within the Language, Visual-Perceptual-Motor and Body Awareness and Control modalities. Thus, observation or diagnosis is an ongoing process which proceeds from gross levels of general alerting that the child may have difficulty, through general response to the curriculum, to finer and finer differentiations of skill functioning. Such a diagnostic program is basic to a day-by-day teaching of the children.

The Teaching Process

The educational program flows directly from understanding the children's level of development in behavioral organization and information processing skills. Two general factors can be used to influence the child's effectiveness and ability to learn in the classroom. First, the general program must be organized in such a way that it stimulates the child to organize his behavior more effectively so he is increasingly ready to learn and be independent in learning. Secondly, the activities must be presented sensitively so that they foster information processing skills. This involves uunderstanding how to analyze activities into their component information processing skills and determine the type and level of language, visual-perceptual-motor and body awareness and control skills contained in these activities. Next, how to program such activities longitudinally to help the children develop more effectiveness involves understanding the sequence in which the skills develop and how to design activities in sequential steps which realistically challenge the children to reach the next step. Thirdly, individualizing the program for a particular child requires developing individual skills and clusters of skills within the three modalities. This involves a similar process to the preceding one, but requires a much more detailed understanding of the sequence of both skill development and activity design.

Overview of the Curriculum Guide

The Curriculum Guide is presented in three sections devoted to specific analyses of how skills develop within each of the three modalities of Language, Visual-Perceptual-Motor and Body Awareness and Control (Chapter One in each section), and how to observe and teach children to be more effective information processors in the specific modality under consideration (Chapter Two in each section). Such discussion provides the teacher with the information necessary to understand the overall level of functioning of a class of children, as well as each particular child's pattern of skills. This, in turn, helps her organize a general teaching program and individualize it appropriately to the group's, and particular children's, needs.

SECTION ONE: BODY AWARENESS AND CONTROL

Chapter One

THE DEVELOPMENT OF BODY AWARENESS AND CONTROL

We move in order to act, as well as act in order to move. Mobility is the very cornerstone of our independence. Of prime concern to the educator is the manner in which body awareness and control relate to information processing and its end product, problem solving. Classroom teachers have described gross motor behavior as the big muscles in the body at work. Traditionally, they have agreed that children need to run around and play during part of the school day but mostly from the standpoint of letting off steam or as a relief from long periods of concentration. Consequently, gross motor activities have been funnelled straight to the play yard for recess time and the teacher has generally disassociated herself from this arena of action, allowing the children to interact in their own way.

It is our concern that gross motor behavior be included in the curriculum in a relevant and orderly fashion. We are increasingly impressed with the possibilities for the presentation of important information to young children, especially the disadvantaged or inefficient child through gross motor activities.

GOALS OF THE CURRICULUM

The fundamental goals of the body awareness and control curriculum are threefold:

(1) That the child develop a practical and conceptual schema of the spatio-temporal world -- that is, of the parts of his body, of spatial coordinates and directions and knowledge of the relationship of himself to the environment in terms of spatial position, direction, force, speed, quantity, etc.

(2) That the child develop skillful ways of planning and

executing motor actions within the spatial environment, not only self-propulsion but action in relationship to moveable and stationary objects and to other moving persons.

(3) That the child learn to inhibit movement when movement is not appropriate.

The relevance of a gross motor curriculum for effective progress in school has not been clearly outlined in the literature, but seems to involve some of the following. First, if the child is going to enjoy group games and sports and interaction with his peers, he needs certain concepts and skills. Second, there is every indication that a well developed and organized conceptual schema of movement in space is an aid in learning reading, writing, spelling and arithmetic because they involve notions of space, quantity, direction, etc. Third, many concepts which the teacher wishes to get across to children, like fast and slow or up and down, are basically related to movement and perhaps can be best taught through movement-oriented programs and then transferred to linguistic or paper and/or pencil situations. Fourth, an active gross motor program in the early years of school has motivational aspects, especially for the disadvantaged, not found in verbal or pencil activities. Fifth, the gross motor area is one of the easiest areas to teach the disorganized child. Since one can take him through many gross motor activities from start to finish, the child gets the kinesthetic information he needs and the sequence of what he is doing is overt and apparent at all times. Sixth, a gross motor program can help a child develop better control of his body in space. Many children have extreme difficulty in the classroom, because they do not have their own motor movements under enough control; they cannot sit still, are restless, fall out of their seats, bump into other children, etc. This continual movement leads to a flood of kinesthetic impulses which in turn may lead to even more movement. This distracts the child from paying attention to verbal or visual cues on which he should focus.

The inference of many educators is that the gross motor area has very little to do with school learning. The authors could not agree more that there is probably little relationship between proficiency in isolated motor skills and the child's ability to function as a learner in the classroom. However, the present gross motor or body awareness and control program goes beyond teaching such specific skills to help the child develop a better schema of space and organize, sequence and pattern his movements. Therefore, we feel that such an expanded body awareness and control curriculum is fundamental to many aspects of progress in school.

THEORETICAL FRAMEWORK

The information processing model is useful to conceptualize the development of skills in the area of body awareness and control. Tactile-kinesthetic and visual information provides the input for the child in learning to move his body in space. Certain physical mechanics underlying body movements (base of support, center of gravity, body architecture, strength, and balance) affect the persistence, rhythmicity and accuracy of body movement (output). Physical therapists have given their greatest thought to these two areas and much emphasis has been placed on correcting architecture or building up muscle strength, increasing flexibility, heightening tactile awareness, etc. Children with severe neuromotor and sensory difficulties will need the therapeutic handling that a physical therapist can provide; however, the children for whom this curriculum is written will not likely have severe sensory or motor deficits but rather will be inefficient in their sensory (body awareness) and motor (body control) processes.

Body awareness is the integrative ability to process kinesthetic, visual and later auditory information in building a conceptual schema of space and in understanding what leads to what in terms of body action, force, direction of movement, etc. Motor planning is an integrative skill which is extremely important in body control. Many children who do not have severe neuromotor deficits are, nonetheless, extremely inefficient in planning their movements through space. They move with the wrong force, at the wrong speed, at the wrong time, in the wrong sequence.

In planning curriculum, it is useful to think of activities as falling into one of the following four spheres: assisted movements, movements related to the force of gravity, movements related to moveable objects, and movements in the open system (where complex adjustments have to be made for other people who are also moving). This is based on the fact that body movement occurs passively to the extent that force or support is supplied from the outside, it can be used to help the body overcome the force of gravity, or as a force to move objects. Each sphere involves different problems in information processing and different movement patterns in order for the child to be successful. Assisted movements and movements related to the force of gravity have to be overlearned before the child can go on to higher levels of relating to moveable objects and to other children in the open system.

GENERAL PRINCIPLES OF DEVELOPMENT

Motor development proceeds from gross to fine. The infant responds with mass action; the child learns how to differentiate muscle movements, so that he can, for example, control specific fingers without having to move the whole arm or body. At the same time, he learns how to integrate patterns of muscular movement to perform skilled acts. At first, patterns of the arms or legs are often bilateral and parallel, that is, both arms reach forward at the same time to contact an object. As the extremities gain power and control more specialization can occur. The youngster learns that he need only reach with one arm, while the other remains at rest. Unilateral patterns develop not only with the arm or leg functioning as an integrated unit, but also with awareness of the unique properties of each segment. At the same time, alternating patterns of the limbs develop, for example the left leg could be in extension while the right is flexing, and then the pattern reversed, as in walking or running. Then, complex motor patterns develop. In certain activities, the legs do certain opposing or alternating tasks, while the arms and hands do something quite unrelated and the trunk may be in a variety of different positions. Finally, the child has to be able to make these compound patterned movements while monitoring, moment by moment, visual and auditory and kinesthetic cues from his environment. For example, to ride a tricycle, the child learns the reciprocal leg movements (alternating pattern) while keeping his hands on the handlebars (unilateral pattern) and his head looking upwards to watch out for stationary or moving objects (visual monitoring cues).

Differentiation also occurs in the child's awareness of his body and its movements. At first the child does not know himself from his environment. It is only as he observes himself moving and being moved, touching the environment and touching himself and sensing the double versus the single tactual experience, that gradually he begins to shape an awareness of his body and its parts, the environment and its coordinates. As Barsch (1967) has pointed out, the young child learns terrestrial geometry by moving himself about, seeing the relationship of the direction and the force of his actions in relation to distance traveled and direction in the environment.

A second and related general principle is that development proceeds sequentially. Remembering this, a teacher who is attempting to teach skipping, for example, ought to be aware that the child must be able to walk and accelerate his pace to running, as well as gain independence in hopping on each foot before he attempts to learn the sequential rhythmic pattern of alternating a step hop on one foot with a step hop on the other foot (skipping). Some children who do not skip may be very close and ready to skip while other children who do not skip may be months away and need to practice other skills first. This principle underlies the whole development of this curriculum and is the reason why tasks are analyzed into their component parts and presented sequentially for learning.

A third principle of development is that children learn because they are motivated to practice and repeat certain movement patterns which are appropriate to their stage of development. Repetition leads to the overlearning of movement patterns, which increases the efficiency of motor planning. This leads to the automatic and smooth control of the body necessary for handling more complex movement patterns as well as inhibiting unnecessary and distracting movements. The motivation for this practice may be self-mastery, adult approval, peer interaction, as well as pure enjoyment. If a child is highly motivated for an activity but does not have the skills to perform the activity at its usual level of complexity, the teacher can capitalize on his motivation to participate by modifying the activity to be more in line with his skills.

BASIC NEURO-PHYSIOLOGICAL APPARATUS

The neuro-physiological apparatus underlying body awareness and control includes the proprioceptive-tactile, visual and auditory sensory systems; the mechanical structure of bones, muscles, tendons and joints; and the integrative brain functions which mediate these two peripheral processes.

The proprioceptive organs are of primary importance in body awareness and control since they provide a means for the child to learn about body position relative to his environment. The tactile exteroceptors receive messages of pain and pressure and touch and assist in this process. These proprioceptive-tactile cues work together with visual cues to provide a more complete picture of the outside environment and body position. The child learns to approximate visually how far his limb has to move, and then knows how much movement is required by specific muscles to get to that position. This detailed kinesthetic/visual mapping of the environment is extremely important for precise skilled movement. Secondarily, the auditory system becomes important for monitoring, controling, and triggering motor action. Providing verbal labels for the spatial coordinates of our world is of great significance in cognitive learning. The combination of proprioceptive-tactile, visual and auditory systems provides for efficiency of motor movement, as well as an understanding of the body in space.

Hundreds of muscles in the body are attached to the bony skeleton at the joints. These joints are the articulation points that allow for various, yet distinct, ranges of movement by segments of the body. There are some joints like the elbow and knee, that merely close and open in a direct line and, therefore, are capable of very limited movement patterns about one plane. The shoulder and hip joints are the most versatile since they allow for movement away from and towards the body, as well as for rotary movements.

The arrangement of muscles around joints provides a system of levers that provide for the delivery of work. Some levers provide movement that yields great power. Others, because of their design, allow for speed and increased flexibility at the expense of power. The levers found within the arms and legs provide for the greatest amount of flexibility as well as power.

DEVELOPMENT OF MOTOR SKILL

The development of motor skill is discussed in four major sections corresponding to the four spheres of motor activity. The first sphere or stage has been called Assisted Movement. This involves all of those movements in which the environment provides significant support for the activity. This may be noted in the early years when parents are actually picking up the child or lifting his limbs (passive movement). In later years it underlies the use of supportive objects like chairs or junglegyms. The second sphere (or stage) occurs before the child begins to walk (as he explores gravity by lifting parts of his body) but becomes extremely important after the child is up on his feet and learning how to move and control his body in relation to the force of gravity. The third stage involves movements in relation to moveable objects. Movements in this sphere obviously build on the perfection of the movements in relation to the force of gravity and add the factor of the child acting on things which he can kick, throw, drag, or get on and propel himself. To do these things, the child not only has to be able to control his body in space, but also has to learn how to control the moving properties of objects. The fourth sphere involves movements in the open system, i. e. relating to other children in complex games and activities. This can be thought of as an extension of relating to moveable objects but, as other children are extremely unpredictable, much more complex adjustment is required.

While there is increasing development within each of these four spheres over the lifetime of the child, it is also obvious that one stage builds upon another and that they interact in a spiraling fashion to allow the child to learn more and more complex ways of planning and controling the use of his body in space. For example, if a child is not performing well in circle games, which are activities involving movements in an open system with considerable auditory and visual pacing and complex adjustments with other children, the child may not have adequately established motor patterns in relationship to the force of gravity, i. e., walking, running, jumping, turning around.

ASSISTED MOVEMENT

Assisted movement is, as its name suggests, movement of the child with support either from people or inanimate objects in his environment. In the very early months, the traditional assisted movements we think of are those given by parents in pulling the child to sit, turning him to change his position in the crib, and later on providing the child with a playpen in which he can practice pulling himself up onto his knees and then up on to his feet. Also the youngster is learning to move in relationship to support that is offered by the floor or the crib, etc. Later in his development, we see a child practicing climbing up upon chairs or rolling off the couch, pulling himself up and down on kitchen counters, etc. Both the adults in his world and the furniture within the home are acting as assistive devices to help him accomplish rather important tasks. In the classroom, the child is supported by chairs or mats, which are particularly structuring and comforting when the child is tired or restless.

The area of assisted movement involves the development of the stability and power of basic muscular movement with the attendant feeling of comfort and security. The child is learning at first through passive activity and then in relationship to supporting objects that he can control parts of his body with muscle power to hold them stable, i. e., he can hold his head on his shoulders in a proper way, can sit erect by means of his trunk, or hold the upper extremities poised and ready for action. While on the surface, this looks like there is no muscle power involved, actually there is power involved in holding the opposing muscles of the body in such a way that the body is still. In other words, it takes work to stay still.

Likewise at this stage, power has also begun to be used to move muscle groups. Some of the muscles in the body are more developed towards holding the body stable, and others are more developed for providing movement power. It is only the development of this basic stability in the rudiments of stability and power for work that allows the child then to go on to the next stage which is movements in relationship to the force of gravity. In order to do this successfully, the child has to have the rudiments of good stability and the beginnings of some good muscle power.

These passive and assisted movements provided by the parents or other adults provide a means for the child of differentiating parts of the body during dressing and feeding activities. For these activities the arms and legs are moved independently and this would seem to provide the child's first notion of the parts moving independently apart from gross total body movements. It is through this close relationship with adults, usually the mother or father, that names are given for certain specific parts of the child's body.

Through the gentle roughhousing that fathers usually perform with the very young child, like tossing him in the air or tipping him upsidedown, fathers are actually providing many changes of body position which the child is not yet capable of performing on his own. These passive and assisted movements provide very secure kinds of situations in which the child is learning to be comfortable in various atypical positions of the body in space. This basic comfort in movement and changes of body position is necessary for the child to be able to independently perform these activities at a later date. Activities such as performing a somersault or swinging on a swing can be very anxiety provoking for the child who is not comfortable with changes of his body position in space.

MOVEMENTS IN RELATIONSHIP TO THE FORCE OF GRAVITY

The next developmental sphere involves body movements in their relation to the force of gravity. These are motor activities in which the degree of support from external sources has been removed and performance depends solely upon the youngster's ability to manipulate himself in a variety of ways to overcome the force of gravity. Movement practice related solely to the force of gravity equips the youngster with additional information that he needs as a basis for success in relating to moving objects. First, however, he must have his own movements under adequate control.

This stage becomes most important at the time that the youngster learns to walk independently. This singular achievement and important motor milestone signals the beginning of a whole new world of motor behavior as the child can now learn many methods of self-propulsion. Further, as the child spends most of his walking moments in a vertical posture, visual cues are received from a more consistent (horizontal) position, and the child is able to code the world visually, motorically and cognitively into spatial coordinates, i.e., forward, back, up and down.

Learning in this movement sphere has a great deal to do with the youngster's initiation of movement patterns. Where the first sphere of assisted movement is characterized by passive participation and stabilization relative to stationary objects, this stage is characterized by more deliberate activity on the individual's part. He need not confine his motor patterns to the fact that he can move because a certain stationary object is handy. Since he can now get himself up onto his feet, and has the ability to move without the support of stationary objects either inanimate or animate, he is "on his own". His learning now involves even more trial and error; exploration of the varied body movements that are related to the force of gravity takes time and endless practice. The period of the most extensive new learning in the sphere extends from 18 months roughly to four years of age. Further, refinement of self-propulsion and its combination with movements in other spheres continues for many years. At first, movements related solely to the force of gravity are somewhat primitive but they continue on through life. Depending upon the recreational or athletic nature of the activity, they can develop into very refined and very skilled movement patterns.

In this stage, a youngster is first spending a great deal of time pulling himself up and down off the earth's surface. Then, he is learning to run, experimenting with changing his speed of locomotion, and changing his gait and its direction. Children at this level are squatting and getting up and down; going up and down stairs; walking, hopping and galloping in forward, backward and circular spatial patterns; beginning to balance alone standing on one foot and exploring jumping patterns. Rhythm becomes one of the important elements of gross motor activity, as movement of the body becomes more smooth, patterned and efficient.

As the youngster learns to move against the force of gravity, he picks up information about how much, how fast, how far, etc. He learns about up and down and about in and out, etc. Through his experimentation, he learns about falling, about how strong he is, how strong other things are, what he can move and what he can't move. Further, now he is moving independently in a world where others move independently, he gathers information of their movement as related to himself. He is also going to learn that sometimes the patterns that he initiates are restricted by adults for his own protection, and this is not always easily understood or accepted by the youngster.

MOVEMENT IN RELATION TO MOVEABLE OBJECTS

As children relate to moveable objects, they begin to gather a whole new sphere of skill and information that is important for them. There are moveable objects for them to propel and catch through the manipulation of their arms and hands; there are others for them to kick and jump over by manipulation of their legs; there is still other equipment for them to get on or move around that involves the entire body with arms and legs and trunk doing different things at the same time.

This stage marks the beginning of such activities as bicycle riding as a real means of getting around. The bicycle will get you there faster and it will stop and go when you want it to. You can go around in circles or change directions of movements. It is a fun way to transport yourself through space. This is also the time when we see children enjoying see-saws and swings. We see children involved with hula-hoops and roller skates or playing with balls and other missels. We see children involved in building boxes, chairs or other objects moving from one position to another, making forts and garages and moving small toys about. We also see children playing with blocks, taking some from one point to another, building a bridge in order to move themselves from one point in space to another, etc.

Youngsters gradually learn to act and react to moveable objects with increasing precision. This can be illustrated by observing how children learn to catch a ball. First, the youngster is aware that this object is coming in his direction and that it is to be captured. In actuality, the ball capturing is first accomplished by using the whole body. We very often see children throwing themselves at a ball, almost in an effort to tackle the moving object and pin it down, or just to stop its movement. The next and more refined aspect involves trapping the ball in its flight through space. This takes both hands moving in a rather specific pattern. Initially, the chest is used to help as well.

Very refined methods of catching this moving object involve smoothly snatching the ball out of it's path of movement in space with a minimum of excess body movement and with increasing rhythm. This developmental sequence comes about only after keen trial and error practice in eye-hand-body coordination. This refined method would not come fully into being in the normal developmental sequence until approximately 8 or 9 years or more. Of course, as the child grows, further more refined athletic skill is possible with the arm and we see the extension of the arm in terms of a tennis racket, badminton racket, baseball bat, or first baseman's mitt, etc.; these become extremely refined, patterned, movements.

At this stage, the child gathers more information about the world around him. He learns that a certain amount of force will throw a ball a certain distance; more force will send it farther away or higher up in the air. He learns that he can go faster and farther on a bicycle with greater conservation of energy, than he can running or walking on his own two feet. He is undoubtedly paying a great deal of attention to the properties inherent in the equipment he is moving. For example, balls roll and some bounce, some can be thrown fast, other float, etc. The child also learns how to stabilize his own body in reference to the moving object, i.e., putting on bicycle brakes too fast can propel one over the handle bars. He learns that things wobble, roll or will not support weight so that he must take precautions as he gets up on moveable objects.

Since developing precise movement in relation to moveable objects requires considerable practice, it is obvious that such skill will be limited if the objects for practice are not readily available to the child. For example, if he has never seen a bicycle, then he is not going to know what to do with it. If balls and bats and jumpropes and roller skates are not provided for him to manipulate, he is certainly not going to develop skill with such equipment. Further, some moveable objects can be manipulated by the child by himself, while other objects necessitate other human beings. For example, a youngster can't learn to bat a ball if there is no one there to throw it to him. Since disadvantaged children often do not have the opportunity for such practice and psychoneurologically inefficient children often cannot organize themselves to make the practice effective, presentation of these activities is an integral part of a curriculum for such children.

MOVEMENTS IN THE OPEN SYSTEM

This sphere of movement has to do with the child's participation with other children and adults, both in loosely organized play and increasingly in group games and athletics. There may or may not be moveable objects involved, but the essential information that the child will gather in this stage is related to the many new kinesthetic-visual and auditory variables that are inherent when other children are involved in the activity. The child's lack of adjustment of this movement may spell the difference of whether or not his team wins the game, whether or not he gets hurt or whether or not he has fun. At this stage, his success in interacting with groups of children has possibilities for developing recreational interests that will provide him with satisfaction throughout the rest of his life. Since youngsters learn from each other, as well as from their adult instructors, it is important that each child have adequate motor skills to cope with his peer group.

For the most part, there is a structure imposed for the participation of a group. The child not only has to learn to adjust his movements to the movements of others, but he has to learn how to do so by the rules of the activity or game. The reader is referred to the discussion on circle games in the Task Analysis section of this curriculum.

Movement in the open system is developmentally at a high level. Refined movements in the open system are typified by group or team games. However, between unorganized play and team games are many sequences of development and activities with which the disorganized child can be helped. So often it is expected that all children will be ready for physical education programs at the age of eight or nine, without any consideration to developing the various precursor body awareness and controls skills in the years between four and eight.

As early as two years of age, many toddlers can be seen playing in imitative or parallel fashion with another child. Engaging in this activity is the beginning of an understanding of how to move in the open system. At this level, children do not have the control of their own bodies in space, the requisite skill in manipulating objects or the conceptual development that allows the learning of rules. However, they begin to experiment with movements in the open system by learning to play in parallel fashion without interfering with or interrupting the other child.

Gradually, children begin to interact with each other in a grossly coordinated fashion - the rough and tumble activity of rolling in snow or leaves, cooperating in carrying an object, assisting another child by holding something while he acts on it, etc. Simple circle games, such as

Ring Around the Rosey, provide the child with knowledge of how his movements interact with the movements of others to conform to a set pattern which makes the game successful and, hence, enjoyable. At first the child is walked through such a circle game and only needs to fall down at the appropriate time and has many visual, verbal and physical cues provided by the older children or adult. Gradually, more children begin to play in a smaller space as they learn to move in coordination with each other. At the age of three, a group of children playing around swings, jungle gym or wading pool can be chaotic, but are more manageable activites for five and six year olds. The children are obviously learning to chart space, anticipate the directions of others' movements and adjust their own movement patterns accordingly. Psychoneurologically inefficient children are often excluded from this kind of activity by their peers because of their inability to handle these complex adjustments.

Traditional pre-school games provide practice in increasing control of movements in the open system and a natural learning ground and transition to team games at an upper elementary school level. Careful planning of these activities should be an important part of the curriculum in the pre-school and early elementary grades.

DEVELOPMENT OF BODY AND SPATIAL AWARENESS

As children move through this sequential development of assisted movements, movements in relation to the force of gravity and to moveable objects and finally in the open system, they should develop a specific and well-organized store of practical and conceptual knowledge about body and spatial characteristics. This includes knowledge of one's own body parts and their location and function, awareness of spatial characteristics of the environment, and finally knowing how to place the self and objects in specific spatial arrangements.

Knowledge of the name, location, and fundamental body parts increases through the use of these parts and hearing the verbal labels provided by parents or older siblings. The child makes the association of the verbal label with specific body or spatial parts long before he is able to use this label in conversation. The recognition or identification of these verbal labels and the child's eventual incorporation of these into his own functional vocabulary depends on the amount of physical movement and the frequency with which the spoken label accompany these experiences.

Generally, we assume that by eighteen months to two years of age the toddler is learning the name and the function of significant body parts, i. e., eyes, mouth, ears, hands and feet. This learning is probably in direct proportion to the amount of verbal and physical attention given to the manipulating and labelling of these parts during feeding and dressing, etc.

By three or four years, the child becomes much more familiar with the details of these body parts on his head and extremities through manipulating objects, learning to bathe and dress himself, etc. Through this process, the knowledge of gross body parts becomes much more refined and the child becomes aware of such specifics as the two elbows, two knees, two shoulders, etc.

By school age, still finer detail of body parts and their specific functional qualities is being learned: for example, around the eye there is the eyelash and the eyebrow, near the tummy there is the waist and the hips, etc. The easiest and most common way that a teacher gathers information about childrens' knowledge of body parts is by asking them questions such as, "Show me where your nose is." "Put your hands on your ears." "Touch your elbow with one hand." "Pat your knees." "Shake your arms." "Stand on your tiptoes." "Walk on your heels." This inquiry would fit in very easily during games such as Simon Says.

Another significant area of learning for the child is how to place himself in various spatial positions and the verbal labels associated with these positions. As the child manipulates household objects and toys, he is learning a great deal about the placement, function and limitations of his limbs, trunk and head as well as the body as a coordinated whole. Through trial and error, the child gathers precise information that allows him to know just how high up he has to lift a leg in order to straddle a hobby horse or just how far he needs to reach outward to pick up a glass of milk that is placed on the table, etc. In essence he is finding out how much space his body takes up and the force and direction necessary to perform acts successfully. In this way, the child learns the basic experiences underlying the verbal use of prepositions such as up and down, in and under, on, on top of, in back of, in front of, beside, over, top, bottom, above, below and the middle. These prepositions are the verbal labels that the child uses to overtly and covertly direct his movements through space. The child first learns these concepts in reference to his own body and then projects them outward to map the way objects are arranged in the environment.

In the first eighteen months to two years of life, children spend endless hours in going up and down in relationship to the earth's surface, rolling over on the floor and changing position from the horizontal to the vertical. Through this, they develop a feeling of up and down and in and under, because they have been in these positions many times. Children retrieve their balls and other toys that have escaped them and rolled under the bed, couch, or chair. They climb up on chairs or their daddy's lap and subsequently climb down to the starting point.

At three or four years of age, children are experimenting more and more with toys and the process of dressing; They put things on themselves, on top of other objects, or in things; i.e., their cup back on the table, their spoon in the bowl. They have played hide and seek by standing behind the couch or retrieved blocks or balls which have rolled behind or are in back of certain objects within the home.

As they play with other children as well as play by themselves, youngsters increasingly experiment with body movements. They find out how close to the edge they can walk without falling down. When somersaulting, they find out how much space they need so that at the end of the somersault they won't bang their legs against something. Through talking about this trial and error process with adults and other youngsters (or to themselves), children become more aware of the verbal symbols that indicate such spatial positions as over, top, bottom and beside. As their world increases in organization, they learn that verbal symbols define spaces in their environment; their clothing are kept upstairs, their balls and bikes are outside. Further they learn that certain objects are to be placed in certain positions; the words top, bottom, back, front and beside, then denote the "right" spatial placement of objects.

By kindergarten age, children are beginning to use the words above, below, near, away from, between, etc. This indicates that they have an awareness of a middle referent position: for example, above and below must be in relationship to a center starting point, and between suggests two referent points. The child first learns these directional concepts and the associated prepositions in relation to himself, such as putting himself in, under, on top of, above, and below an object. Later he applies them to the relation of objects to himself and finally of objects to each other. Children with poor body and spatial awareness display their difficulties graphically when they have to act on verbal command or plan their motor acts in space without the help of a model or a demonstration.

Chapter Two

BODY AWARENESS AND CONTROL CURRICULUM

The curriculum guide is based upon the developmental notions that body awareness and control proceed from gross to finer differentiated patterns, in sequential steps, and that gross motor activities have intrinsic interest for children as well as value in preparing them to meet academic challenges. This chapter provides ways of observing and analyzing the body awareness and control of kindergarten children, and Composite Activities and Specific Skills to present to the class to stimulate development. Table I provides an overview of the observation and teaching materials presented in this chapter.

TABLE I: OVERVIEW OF THE BODY AWARENESS AND CONTROL CURRICULUM

Observation of the Children	Classroom Activities
A. UNSTRUCTURED OBSERVATION of independent function in the classroom and the playground	A. CROSS MODALITY ACTIVITIES (See Circle Games in the Task Analysis section of the curriculum)
B. SEMISTRUCTURED OBSERVATION- of independent function in the classroom and the playground	B. COMPOSITE BODY AWARENESS AND CONTROL ACTIVITIES 1. Warm-Up Activities 2. Basic Rhythms and Animal Walks 3. Games with Chairs 4. Rope Games
C. STRUCTURED ACTIVITIES FOR GROUP DIAGNOSIS 1. Simon Says-body and spatial awareness 2. Obstacle Course-primarily complex assisted movements 3. Locomotor Patterns-movements related to the force of gravity 4. Target Activities-movements related to movable objects	C. TEACHING SPECIFIC SKILLS 1. Skipping 2. Jumping with Two Feet 3. Somersaulting 4. Jump Rope 5. Roller Skating

Observation of the child proceeds from global assessments of independent function on the playground or in the classroom through more detailed observation in gross motor activities presented by the teacher to more detailed analysis of the child's performance in specific diagnostic activities. These finer and finer levels of observation are to be employed only as necessary. If the child moves adequately and demonstrates good body and spatial awareness, one would not necessarily look to see what specific skills he can or cannot perform. However, if some children were having difficulty, the teacher can utilize specific group diagnostic activities to pinpoint some of their areas of weakness.

As there are progressive levels of observation which the teacher can make in unstructured, semi-structured and structured situations, so there are levels of classroom activities in this curriculum for the teacher to draw upon. At the most complex level (Parts A and B of Classroom Activities in Table I), certain Cross Modality Activities such as Circle Games and certain levels of Composite Activities can demand sophisticated body awareness and control on the part of the children. If a child can learn precise body movements in complex sequential patterns and understand his spatial environment in these complex activities, he may have little need for training in the Specific Skills (Part C) which are on a much simpler level. Many children from middle class homes have the requisite information processing skills to be able to handle complex gross motor activities, others do not. However, many disadvantaged children with psychoneurological inefficiencies (typified by the nine children in this project) have considerable difficulty with the activities in Parts A and B.

There seem to be three basic approaches to take with these children. First of all, Cross Modality Activities such as Circle Games can be simplified within each of the modalities through which the game is presented and performed, so that the children can learn them easier. Second, progressive levels of difficulty are provided in the Composite Activities outlined in this chapter, so that the teacher may start the children off at a suitable level for the group and gradually increase the difficulty level of the activity - for example, with Animal Walks it is possible to go back to very simple gait patterns such as walking, running, and hopping before moving up through more complex movement patterns involving considerable integration of various parts of the body into sequential purposeful action.

The third way of working with children who do not have the requisite skills for complex body awareness activities, is to isolate and concentrate on the specific skills involved. Thus, one may wish to teach a child skipping or somersaulting so that he utilizes these particular skills in the complex activity. Children with severe neuromotor defects may need much help learning to walk, hop, do somersaults, or in other ways develop specific skills. It is assumed that many disadvantaged, psychoneurologically inefficient children will need some training in these basic skills, but not on as elemental a level as children with severe neuromotor problems. In any case, the main purpose is not skill training per se but the development of integrated patterns of body awareness and control. Thus, while it is important for a child to learn how to do basic gait patterns smoothly and rhythmically, it is more important that he have these skills at his fingertips so that he can participate in higher level activities which make it possible for him to derive new information about his world.

To sum up Table I, observation goes from unstructured through structured as one wishes to look more closely at a particular child's functioning; the activity or teaching process starts where the children are observed to function and attempts to help them develop skills and then to integrate them into more complex activity units. Through such informal and structured observation of a child's skills and his response to group activities, the teacher finds the level of gross motor activities to present to her class and determines which children will need to have materials varied because of particular difficulties. This close interaction between observation and teaching follows the test-teach-test-exit and task analysis models which underlie all of Meeting Street School's programs.

Teacher's should be flexible in the way they use the observation and activity sections in this chapter. Sometimes the materials can be presented in group settings with all the children performing at the same time, or one child performing while others watch, or children performing after they have observed other children, or children actually being taken aside individually or in very small groups for observation and help. Some of the activities can be done out of doors, depending on the time of year and playground resources. In general, the curriculum is based on simple materials available to most kindergartens. However, the designers of the curriculum feel that the body awareness and control modality has been slighted in most curriculums and that the average kindergarten is missing some simple but important equipment. Some of the activities may seem rather "physical" to teachers who are not used to or do not expect to get right in and perform with children. Of course the style the individual teacher brings to the class will reflect her own interests and skills. The program may be difficult at first for a teacher who believes in bringing a very "feminine model" to the classroom, and whose dress will not allow for the freedom of movement and participation with the class which is possible through this curriculum. Others may welcome the opportunity of more active participation.

OBSERVATION OF BODY AWARENESS AND CONTROL

Teachers are known for their keen powers of observation. This ability is one of the most important tools of their profession. Teachers make observations about the gross motor behavior of their children as witnessed by such descriptions as, "he's clumsy, she's so dainty, she's always getting in her own way, he drops everything he touches, he moves like a monkey," etc. The classroom teacher is in the enviable position of being able to make comprehensive, longitudinal judgements about each child in her class. We would like to help the teacher gather detailed information about body awareness and control and relate these findings to curriculum planning.

There are many ways of observing a child's behavior. One can generally note his ability to orient himself, move around, and be aware of space by watching how he plays outside with his peers in the open space with its special equipment and from his response to some of the classroom activities to be outlined in this chapter.

However, when one wants to take a closer look at some of the specific skills necessary for performance in these more complex activities, it may be useful for the teacher to introduce the group diagnostics Simon Says, Obstacle Course, Locomotor Patterns, and Target Activities. These allow her to look at various skills in assisted movements, movement in relation to the force of gravity and to moveable objects that the child needs to perform more complex activities. The teacher can present these group diagnostics with a group of children performing or one child performing in front of a group. If she has a particular question about the skills of any child, she can take him alone at some later time and specifically watch him go through certain parts of the group diagnostics.

A. PERFORMANCE IN UNSTRUCTURED SETTINGS

This will yield information regarding the spontaneous classroom orientation of the child and degree of independence in dressing, feeding and toileting habits, as well as basic motor play skills.

Simple observations in relation to the questions below will provide the teacher with an overview of each child's level of accomplishment.

The deficits recorded by the teacher will have established a baseline for areas she may wish to observe in more detail or can present special learning experiences.

Patterned Movements related to Level of Independent Functioning Within the Classroom:

1. Child's orientation to the bathroom and its facilities. Is the child independent or does he need supervision and specific help?

2. Child's level of independence with self help skills. Can he dress, feed, open and close doors and windows, etc. by himself?

3. Is the child able to carry and move equipment such as chairs, toys, books, blocks, tables, etc. with assurance?

4. Child orientation to the general equipment in the room. Does he bump into objects, trip over things on the floor, fall out of his chair, or seem unaware of where things are after he has had experience with them?

Patterned Movements in the Use of Outdoor Play Equipment:

5. Is the child perseverative in activities, or overactive?

6. Does he have the conceptual ability to use the play equipment appropriately? Does he use it spontaneously?

7. Does the child have the freedom to involve himself in loosely or formally organized group play or does he prefer to remain aloof from group play in solitary pursuits?

8. Is this a child who seems accident-prone and takes a lot of tumbles?

9. Does the child accomplish gross motor activities with the smoothness and efficiency expected of his age?

10. Is the child afraid or hesitant to involve himself in gross

motor play activities, especially where heights or potential body contact with other children are concerned? Here, the surface upon which the children are acting can affect performance.

B. PERFORMANCE IN SEMISTRUCTURED SITUATIONS

A more detailed profile of the characteristics of a child's gross motor performance can be obtained from the inclusion of additional questions such as when does he perform: on verbal direction or only after demonstration? Is he able to do exactly as requested? How long is he able to sustain the activity? In order to observe performance under semistructured conditions it is obvious that the teacher will need to prompt the children through verbal suggestions. If the teacher is playing with the children, her suggestions will undoubtedly be received with more enthusiasm than if she is just a nonparticipating bystander.

It may be difficult for the teacher who is unfamiliar with this area to assess children's body awareness and control without any guidelines such as provided by the structured group diagnostic activities below. With experience, however, the teacher will gain confidence in this kind of observation.

C. STRUCTURED ACTIVITIES FOR GROUP DIAGNOSIS

The group diagnostics are presented in four sections. First, the Simon Says game provides opportunities to assess the child's verbal understanding of body and spatial position and direction.

The Obstacle Course includes climbing onto and jumping off an object, crawling through a stationary barrel, walking up and down stairs with alternating feet, crawling underneath an object, walking on a rail, jumping with two feet, walking with alternating feet on stepping stones, and vaulting the body off the floor to landing on a table. Many of the movements in the Obstacle Course fall in the area of assisted movement or movements in relation to stationary objects because the child must negotiate himself in relationship to the design of the objects to balance on them or use them for support. Obviously, some of these Obstacle Course items have additional elements of gait patterns or movements in relation to the force of gravity, especially stair climbing, jumping and stepping stones.

The third group diagnostic procedure is called Locomotor Patterns and covers hopping, walking backwards, skipping, somersaulting, and rolling sidewards. The first three are variations of the basic gait pattern while the last two involve total body movement in different spatial orientations without primary use of the feet for stability.

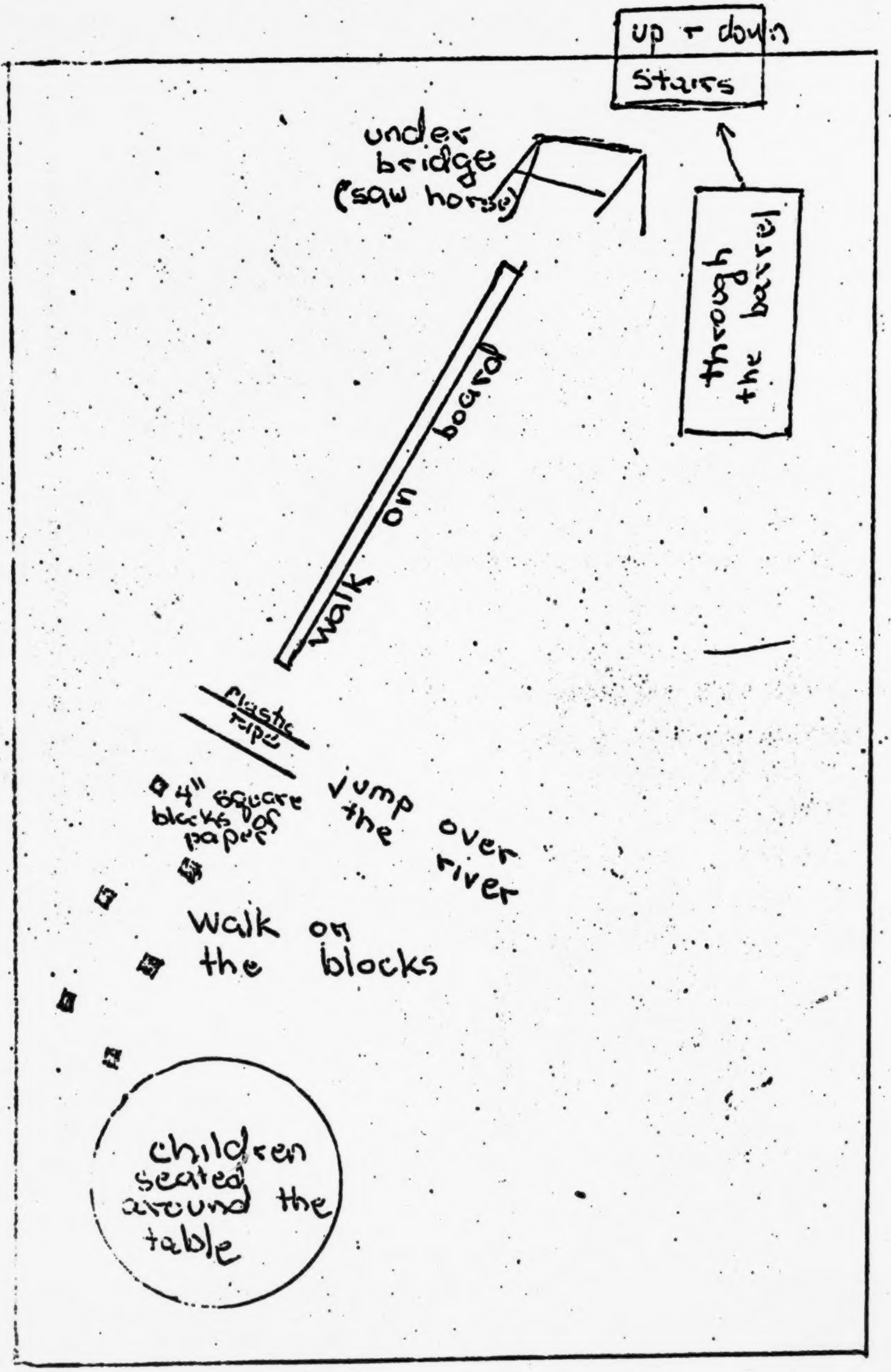
Target Activities primarily involve the arms and legs as propelling or receiving forces in relation to moveable objects. We have selected the bean bag pitching, kicking a ball, moving a chair around the room, and catching a ball. Some of these give additional information in terms of hand and foot preference.

1. Simon Says (Body and Spatial Awareness)

Before asking children to demonstrate from verbal and visual cues in the Obstacle Course, Locomotor Patterns and Target Activities, the teacher might gather some information on the child's ability to follow verbal commands through a form of Simon Says. She can ask one child at a time or the entire class to walk backwards, walk forwards a number of steps, turn around, bend over, put themselves into or under or on top of something, stand in front of or in the middle of something, put themselves below or near or between objects, or request that parts of their body be placed in various positions.

We think it important as well for the teacher to gather information about the youngster's ability to place objects under his control in specific arrangements in space because this, of course, is what will be happening ultimately in his manipulation of the traditional tools of education: the pencil, the pen, the scissors, etc. The teacher is going to expect him to put his name at the top of the page, his pencil down beside his paper, his crayon down at the top of his desk or pick up his book that is inside his desk and put it on top of the desk but not to open it, etc. She is going to expect him also, as a participant in the class, to help her get ready for aspects of the daily program; for example, bring chairs over beside the piano or push the tables back beside the windows. At the end of a lesson she is going to expect the children to help her to clean up and put objects within the classroom away in order to go on to the next part in the day; for example, put the records up on the top shelf, put the blocks down on the bottom shelf, move your chairs back to the table and go stand behind the flag.

The teacher can gather information from the way the child performs in such situations and by playing Simon Says. By giving each child a block or a bean bag, ask them to move the object as she asks. Start off by asking them to put the bean bag on their head, under their chair,


up + down
Stairs
under
bridge
(saw horse)
through
the barrel
walk on board
Plastic
rope
4" square
blocks of
paper
jump over
the river
walk on
the blocks
children
seated
around the
table

in the drawer, on top of their hand, below their desk, between their chair and their desk, and so on. In this way the teacher can assemble important information about each youngster's ability to understand the verbal directives.

2. Obstacle Course (Assisted Movements)

Motor Activities	Materials Needed
1. Climb onto an Object	child's desk or table
2. Jump off from an Object	child's desk or table
3. Crawl through barrel	open ended barrel such as used by furniture movers for packing
4. Walk up stairs alternating feet	stairs - natural tread, height 7"
5. Walk down stairs alternating feet	stairs - natural tread, height 7"
6. Crawl under an object	saw Horse with 9" to 10" clearance
7. Walk on a 2x4 walking board	2 x 4 board, 6-12 feet in length
8. Jump with two feet over a six inch distance	brightly colored plastic tape
9. Walk alternating feet on specific landmarks on the floor, called stepping stones	six, 6"x6" squares of colored construction paper placed in alternating foot patterns on the floor
10. Vault up onto a table	child's desk or table

It is important that the teacher set the obstacle course up in a continuous pattern so that each child can easily follow the entire course. In the school classroom there might not be any stairs; in that case, this activity may have to be separated from the obstacle course and rated at a different time.

The arrangement of this activity that we feel to be most satisfactory is to have the children all seated at one table at the end of the obstacle course so that they can have a clear view of all 10 posts to which they must concern themselves. The obstacle course could be set up outside in the playground area as well.

The teacher should stand near the first piece of equipment, the table, facing the children and simply describe what she would like the children to do. The teacher can either demonstrate or have one of the children go through the Obstacle Course slowly as she describes the motor acts. The teacher must take care that there are no other objects within the obstacle course field to interfere with motor performance. The teacher must clearly define which is the start of the obstacle course and which is the finish. Whenever a child is climbing up onto the table prior to jumping off, the teacher should be beside the table as a safety precaution.

Task 1: Climb onto an object - The teacher observes that the child is able to grasp hold of a steady object (table), climb up onto it, and stand upright by himself on the top. She observes whether the youngster has difficulty hoisting his weight off the floor and getting it up onto the table or whether this is easy. The youngster will be allowed to take a little hop or leap because this is a usual way of getting oneself up off the ground. The teacher can observe whether or not the youngster has any concerns, once he stands up on top of the table, about being that high off the ground. We would like the teacher to observe as well whether or not the youngster is aware of the danger so that while he moves fast to get himself up onto the table, he then stands up carefully and proceeds to the edge of the table carefully and pauses a moment before jumping off. Such pausing is necessary to plan the motor sequence. The youngster who scrambles to the edge and then hurls himself down, not pausing long enough to size up the situation, may show poor motor planning as well as disregard of his safety.

Task 2: Jump off from an object-In jumping off the chair, the teacher observes how the child lands on the floor. The natural way would be to land with the hands out to break the fall and the knees bending to take the brunt of the impact. It is possible, however, for children who have developed skill in jumping from heights to land on the ground almost fully upright. Most children will demonstrate some knee-bends and hands shooting out to break the fall, however.

Task 3: Crawl through barrel-The barrel should be made stationary in a make-shift cradle of sandbags (or pillows on either side with heavy objects weighing it down) so it won't roll all over the floor while the youngster is in it. The teacher can observe that the child gets down on the floor in order to duck his head, and crawls through the barrel on his stomach. The teacher should observe whether or not there is a lot of thrashing around in the form of excessive movements of the arms and legs as he is traveling through the barrel. At the end of the barrel, he should get back up onto his feet easily to proceed on to the next task.

Tasks 4 and 5: Walk up and down stairs - This task should be performed in an alternating step over step fashion, rather than step together step on each step. The teacher should observe each child's performance in relation to the following. At age three, the child is able to walk and ascend the stairs in an alternating step over step fashion. He descends the stairs in a step to step nonalternating pattern. It is at age five that the child is typically able to negotiate the stairs in adult fashion, that is he ascends and descends the stairs smoothly in an alternating step fashion without the use of a railing or other means of support.

Task 6: Crawl under an object - The youngster gets down on the ground and crawls under the saw horse. The teacher should observe whether or not the youngster gets down low enough and goes through slowly enough that he doesn't hit his head or his buttocks on the cross piece of the saw horse. The child should have the ability to gauge how low he must get to the ground in order to clear the saw horse (motor planning).

Task 7: Walk on 2 x 4 walking board - This task is to walk across the 2 x 4 walking board, alternating the feet one in front of the other. A step together step fashion in progressing along the 2 x 4 board is not acceptable. The youngster ought to walk with his hands held slightly out from his sides, at hip to waist level.

The teacher should observe whether or not the youngster is able to walk with one foot crossing over in front of the other foot or whether he has to go step together step and inch along. We would like the teacher also to observe whether or not the youngster loses his balance and has to step off the board, as well whether or not there is an excessive movement of the arms, particularly, flinging around in an effort to maintain balance. A certain amount of arm movement is normal but this is excessive when the arms ride up over the head and shoot out to the side in unregulated patterns.

Task 8: Jump with two feet - The child stands behind the plastic tape and from a standing still position, jumps and lands on his two feet on the other side of the six inch marker. The teacher can observe whether or not the child does take off from and land on two feet or whether he just steps from one foot to the other or hops over from one foot to the other. His legs should be pushing equally rather than stepping and leaping from one to the other.

Task 9: Stepping stones - The child should be standing on two feet in front of the stepping stones after the completion of the jump. He should then proceed to place one foot on each of the stepping stones in an alternating walking manner. The teacher should observe whether the child is able to organize himself in order to place the appropriate foot forward at the beginning (whether it be the left or the right foot) by the position of the first "stone". The child must then alternate his feet onto the other stepping stones in a similar fashion.

Task 10: Vault up onto a table - The child should stand in front of and place his hands on the table. He then jumps, lifting his body off the floor and landing on his knees with his body inbetween his arms. The teacher should observe whether the child is able to suspend his body weight on his arms, a climbing action with the legs is not acceptable vaulting. The child who is very short may be unable to vault onto the table because of the mechanical disadvantage to the height of the table. In such a case, a smaller table or chair should be used to see if the child does have the concept and skill for this activity.

3. Locomotor Patterns

Motor Activities	Materials Needed
1. Horizontal rolling for a distance of 6 feet.	Strip of bright colored tape on the floor to clearly define the 6 ft. distance.
2. Walking backwards across the room.	None
3. Hopping on right foot a distance of 6 feet.	Strip of colored tape on the floor to clearly define the 6 foot distance.
4. Hopping on left foot a distance of 6 feet.	As above

5. Skipping across the classroom	None
6. Somersaulting	Tumbling mat or other cushioning surface.

For this set of activities, an area of the classroom or playground should be cleared so that there will be adequate space for the performance. All obstacles should be removed. The children as a group should line up sitting on the floor along one wall of the room or in a given area of the playground where they will have a clear view of the demonstration. It is best to have each child take his or her turn individually and not to have two or more children performing the activity at once. In this way, the teacher can better attend to the performance of one child. From the children's point of view, there will also be less confusion and possible disruption of the activity.

With the exception of the first and last activities, the teacher can easily demonstrate these locomotion patterns to the group of children. Both horizontal rolling and the somersault can more comfortably be demonstrated by one of the youngsters whom the teacher has already assessed as being fairly well coordinated in gross motor activities. The teacher should present each activity as a separate unit and not proceed until each child has taken his turn. The verbal directions should be kept as brief and as precise as possible and they should accompany the motor demonstration.

TASK 1: Continuous horizontal rolling - The teacher says, "stretch out on your back on the colored tape on the floor with both of your arms straight over your head. When I say roll, start rolling and keep rolling over and over until you get to the end of the tape or until I say stop." If the teacher chooses to use one of the youngsters for the demonstration, she can position him on his back with his arms up over his head at one end of the tape. There she can say "roll" and all the children can watch him roll to the other end of the tape. If the youngster doesn't see or judge the far end of the tape, then the teacher should say "stop" to end the performance.

As each child takes his turn, the teacher notes the following points about his performance. Can he keep his arms up over his head or do they move down and get caught under his trunk thereby interfering with a smooth continuous rolling movement? Can the child roll in a relatively straight line once he begins to roll? Does he roll continuously or does he stop and go because he is having trouble pushing off from back to stomach and not letting his head and legs propel him as they should. Once the teacher indicates that the child should stop, does he perseverate in rolling?

TASK 2: Walking backwards - In this activity the teacher should stand at the far end of the room facing the children and tell them that she is going to walk over to them backwards. Upon saying this, she immediately turns her back to the children and walks backwards slowly and carefully across the room to where the children are seated.

As each child takes his turn, the teacher observes whether he understands "backward" versus "forward". Note also, whether he can walk backward in a fairly straight line with a minimal twisting of the body to see where he is going. Note also if he steps carefully and deliberately (a protective factor) rather than hurling himself into unplanned backward motion.

TASK 3: Hopping on the right foot - The teacher should stand at one end of the tape marking the six foot distance on the floor (this line is perpendicular to the children). Her verbal directions are, "Stand on one foot and hop all the way down the line to the other end." As she gives these directions she or an assistant should stand and then hop along on the right foot, but not verbally indicate that it is her right foot.

The teacher observes whether or not each child is able to maintain his balance long enough to propel himself on one foot for a distance of six feet. Observe whether or not any of the children have difficulty maintaining this one footed moving balance. Do any of them fling their arms around in the effort to maintain balance? Do they have to keep putting the free foot down to stabilize themselves? Do any of them switch feet half way along? Do they imitate the same foot that the teacher used for demonstration?

If they use the left foot, then on the next task the teacher will need to request that these children try to hop with the other foot. The aim is not primarily to discover whether or not the child knows his right from his left foot, but rather if both legs have an adequate degree of stability, power, and skill or whether one is decidely more skilled than the other.

TASK 4: Hopping on the left foot - This task is just the reverse of Task 3 and should be presented in the same manner, however, demonstrating with the left foot.

TASK 5: Skipping - The teacher should go to the far end of the room facing the children and tell them that she is going to skip across the room. Just after she has said this she skips towards the children, stopping in front of them. Then she has each youngster take a turn and do exactly as she has done and then return to his seated place in the line.

The teacher should note, as each child takes his turn, whether or not he can perform an even alternating step-hop, step-hop pattern with each leg. If unable to do this skipping pattern, she should record what he does do. Is it a lame-duck skipping pattern which is a one-sided skip only? Does the child get his feet all scrambled up and almost trip over them? Does the child run or hop instead of skipping? Any of these would indicate an awareness on the part of the child to attempt to vary the basic walking gait pattern but as yet an inability to control the legs in this specific alternating, bilateral pattern.

TASK 6: Somersaulting - The teacher will probably want to select one of the children from the group to demonstrate. In this case, bring the tumbling mat or a pillow over near where the children are seated and line it up horizontal to the group. Maintain enough distance between the mat and the group for the long legged children in case they should roll into the group because of poor motor planning or control. The teacher should position herself on her knees beside the youngster who is going to demonstrate. Verbal directions should accompany the motor performance, as follows, "when we somersault we stand with our feet apart, squat down, put our hands flat on the floor inside our feet, put the top of our head between our hands, push off with our feet and roll over onto our back."

As each child takes his turn, the teacher observes whether or not the children can put all of the isolated steps together and perform a complete somersault. If not, which of the isolated positions appear to give the child trouble? Does he roll over sideways once he pushes off with his feet? Does he tuck his head too far under so he's actually resting on the back of his neck? Does he end up on his back in a straight line horizontal to the children or does he roll into them or away from them? Can he even hold his balance in the squatting position long enough to even get going? Does he obviously enjoy this activity or does he register fear of being inverted in space and discomfort at doubling himself up into a ball?

4. Target Activities (Movements related to moveable objects)

Motor Activities	Materials Needed
1. Two hand throw at a wall target	One 8" or 10" Rubber ball 12" diameter disc of bright colored paper Colored masking tape
2. Bean bag pitching	3 small bean bags 1 waste paper basket large enough to hold an 8" or 10" ball
3. Kicking a ball at a free standing target	One 8" or 10" rubber ball 1 quart size plastic milk bottle
4. Moving a weighted object (chair)	1 Child's chair
5. Two handed ball catch	One 8" or 10" rubber ball

The teacher can set up each one of these activities in advance by marking the 6 foot distance with bright colored masking tape in various areas of the classroom. The first activity also necessitates anchoring the paper disc to the wall at the chest height of the children. This wall marker should also be brightly colored in order that it can be easily discriminated from the wall surface.

The best arrangement for a small group of children for this activity is to have them sit on the floor near the target area so they can watch each other take their turns and see the teacher demonstrate easily. All other obstacles should be removed from the test area so as not to distract the children or interfere with their performance. The teacher should demonstrate the target activity she wants the children to hit and give simple, precise verbal directions while she is performing. Once the children start taking their turns, she should act as ball and bean bag retriever to move the activity along smoothly and to minimize the children running about.

TASK 1: Two hand throw at a wall target - The teacher should stand at the end of the masking tape at a distance of 6 feet from the wall. She picks the ball up with two hands, holds it near her chest, aims at the wall target, and throws to hit the target. Then she retrieves the ball and repeats. Both times she should accompany her actions with a simple verbal description of what she is doing. The teacher, like the children, can use an underhand or an overhand throw. Developmentally, children learn to control the underhand throw first.

The teacher observes if the child can throw the ball with two hands evenly or whether it is sent in a lopsided fashion. Does the ball make too high an arc in the air thereby missing the target? Is the child able to stand still at the end of the tape, take aim and move only the upper limbs, instead of moving the entire body? The teacher also observes the number of target hits; we have arbitrarily selected two out of three hits as being indicative of adequate control in manipulating this moveable object.

TASK 2: Bean bag pitching - The teacher should stand at the end of the tape, 6 feet away from the upright wastebasket. She should pick up one bean bag at a time, take careful aim and throw it into the wastebasket. Repeat until all three bean bags are in the wastebasket. Each time she should accompany her actions with the appropriate verbal description of what she is doing so that the children will know what they are to do when each takes his turn. Only one hand may be used to pitch the bean bag.

The teacher observes which hand the child prefers for this unilateral hand activity. Also, note if he switches hands during the throwing. Observe whether or not the youngster throws the bean bag with such force that it makes too high an arc or doesn't have a sufficient arc to land in the wastepaper basket. Observe how many times the youngster is able to get the bean bag into the wastepaper basket.

TASK 3: Kicking a ball at a free standing target - The empty plastic milk bottle should be placed upright at one end of the strip of 6 foot masking tape. The teacher stands at the other end of the tape and carefully places the ball on the line in front of her feet and kicks it at the target to knock the bottle down. Then, retrieves the ball and stands the target up again and repeats the action. While she is doing this, she describes her actions in simple terms so the children will know what to do. In this activity, the teacher observes the foot that the child selects and whether or not there is any switching of feet. She also can assess whether the ball has been kicked too hard or not hard enough to reach the target.

Once again, two out of three target hits indicates adequate eye and foot control for propelling this moveable object.

TASK 4: Moving a weighted object (chair)- The teacher is to demonstrate how each youngster should pick the chair up (with one hand under the edge of the front of the seat and the one hand on the back of the upright), and carry it (with the weight of the chair evenly distributed in front of the body) from one end of the six foot mark to the other and place it down carefully. Simple verbal cues should be used as the teacher performs.

As each child performs, the teacher observes whether or not the youngster is able to remember how the teacher picked up the chair by seeing if he picks it up in the same manner. Observe whether or not he takes a straight path down the 6 foot distance and whether he can carry the chair easily or drops it at the end through fatigue - this latter being an indication that he does not have the stamina and strength to maintain this carrying posture through the distance.

TASK 5: Two handed ball catch - In this activity, the teacher begins her demonstration with the first child to take his turn. The child will be at one end of the 6 foot strip of tape and the teacher at the other. The teacher should caution the child to hold his hands a little apart and out in front of his chest. Then, she suggests that he keep his eyes on the ball she is holding and watch it as it travels in the air to him; when it gets to him, he should catch it and hold it on his chest. The teacher gently throws the ball underhand. The teacher can either have the child throw it back to her or if he can't catch it, have him retrieve it and hand it to her. The teacher throws the ball three times to each child.

In this activity, the teacher observes whether or not the youngster tries to focus on the ball and maintains his gaze to follow the arc of the ball in the air, and whether or not he has to move his whole body in order to get his hands in position to catch the ball. Also, we want her to observe how many times the youngster actually catches the ball; again, two out of three catches is appropriate to this developmental level.

CLASSROOM ACTIVITIES

From the Overview of the Body Awareness and Control Curriculum Chart at the beginning of this chapter, it may be seen that three types of classroom activities are being presented. The three range from specific to more global. Part C deals with Teaching specific Skills such as Skipping, Jumping with Two Feet, Somersaulting, Jump Rope and Roller Skating. The Composite Activities of Part B involve combinations of body awareness and body control skills in the four spheres of movement. These Composite Activities are sequences of games organized around specific materials or actions - such as the Warm-Up activities on a mat or the floor, Basic Rhythms and Animal Walks which involve the child moving in various gait patterns, Games with Chairs, and Rope Games. Finally, the reader is referred to the Cross Modality Activities, especially to Circle Games, in the Task Analysis section of this curriculum for still more complex activities which involve not only composite body awareness and control skills but considerable integration with skills in the language and visual-perceptual-motor modalities.

In the next few pages, the teacher is first introduced to the five Composite Activities. These are activities which the teacher can weave into her daily lesson plan to provide children with sequential development in various areas of body awareness and control. In each of the five, several levels or variations of the activity are outlined so that the teacher can vary the game to the level of skill of the children in the group, and present the game repeatedly at different levels of complexity over a period of time as the children's skills increase.

Warm-up activities provide for motor movements of various body parts performed with the support of the floor. Basic Rhythm and Animal Walks are games which involve movements related to the force of gravity, as the child is basically asked to vary his walking gait pattern. Games with chairs contain many movement patterns in relation to the chair as a moveable object. Rope Games provide the opportunity for teaching concepts of position, direction, speed, quantity and force. All of these games, but especially Rope Games and Games with Chairs, include higher levels of movement in the open system after the children learn to control and direct their own movements adequately.

At the end of this section on Classroom Activities, the teacher will find hints on how to break basic movement skills down into their component parts or sequences and teach children how to perform these basic Specific Skills. For children who perform well in Composite and Cross Modality Activities, there would be little need to drop back to this simpler level. However, many children who are psychoneurologically inefficient need help with basic skills, as well as with the integration of these skills in functional motor patterns for gross motor activity. The five Specific Skills included here are three in the area of movements related to the force of gravity (Skipping, Jumping with Two Feet, and Somersaulting), and two in the area of movements related to moveable objects (Jump Rope and Roller Skating). It will be apparent that these and many other Specific Skills are basic to Composite and Cross Modality Activities. If a child were having specific difficulty with a skill like skipping in such more complex activity, the teacher could take him for help, and would know that while she helps the child at the specific skill level she should modify the complex activity to be in keeping with the child's limited skills - thus, requiring hopping or jumping instead of skipping.

The five discussions of teaching Specific Skills illustrate different aspects about the development of gross motor skills. In teaching or preparing a child to be ready for the bilateral patterned activity of Skipping, the teacher is mainly concerned with building-up precursor skills such as running, hopping, jumping, etc. In the presentation on learning to Jump with Two Feet, the teacher is given an even more specific and minute analysis of one of the precursor skills to skipping itself. The analysis of Somersaulting illustrates how the teacher can gradually develop the component parts of a skill with the use of supportive props (assisted movement). Jump Rope is included to show sequential steps in a movement activity related to a moveable object, the rope. Finally, Roller Skating provides some practical suggestions for modifying the environment to make possible the learning of a skill related to a moveable object which is difficult to master.

A. CROSS MODALITY ACTIVITIES

See Circle Games in the Task Analysis section of this curriculum guide.

B. COMPOSITE BODY AWARENESS AND CONTROL ACTIVITIES

1. Warm Up Activities

Hopefully, some day all Nursery Schools and Kindergartens will be equipped with tumbling mats. If there are mats available, naturally they should be used because of their cushioning effect. However, if there are not tumbling mats available, the floor surface can be used for programming what we refer to as Warm Up activities. Warm up implies exactly that. The children are going to move their arms and legs and their whole bodies in an effort to get loosened up, preparatory to other gross motor activities. They are also going to be planning and experiencing body movement in at least three spheres of movement.

The teacher should join the group and participate enthusiastically. In this way, she can provide additional visual cues for those children having trouble moving on verbal direction alone and will be able to correct inefficient movement patterns, because she will be in very close proximity to the children.

Most warm up activities are best done with all of the children sitting in a circle on the floor or mat. If they are holding on to each others hands, they can give one another some degree of added stability. In this sitting position on the mat with the children holding hands, the teacher says, "Now we are going to kick our legs up and down," and all the children along with the teacher are encouraged to kick their legs vigorously. The teacher can move from kicking both legs to kicking one or the other leg in isolation. The teacher can give the direction for both legs to bend up so the knees touch the chin, and then both legs to straighten. This should be done in a slow, deliberate, and rhythmical pattern. The teacher can ask for one leg to be moved up so the knee touches the chin and straightened, then the other leg moved likewise. An additional movement for the legs would be to have both legs straightened out in front and moved apart along the floor and then back together, etc.

As the children develop proficiency in moving on verbal command, the teacher can allow them to take turns being the leader and giving the verbal direction for movement. The teacher can borrow, once again, from Simon Says and indicate that she is going to try to "fool" them; they should listen very carefully to what she wants them to do with their legs because she may say something different. This variation can be used to keep the interest level high.

Another activity that can be done in a circle on the floor is to have the children all lie down on their backs, bend their knees up to their chest, straighten their legs up in the air, and make circular "bicycle" movements with their legs. A variation is to bend both knees to the chest, leave one knee bent on the chest while straightening the other and then returning it to the bent position on the chest; repeat with the opposite leg.

Sitting in a circle, the children can also practice situps (sitting up from the prone position) and then moving back down to a prone position under slow and gradual control. For this activity, their arms should be placed across their chests to prevent pushing off with the elbow or forearm. While this is a very good strengthening exercise for the abdominal muscles, but it is used here to aid sustained slow motor movement, which is a strategic component of body control.

A variation of situps is to have the children spread around on the floor in pairs, sitting facing their partners, with legs spread apart and one child's legs on top of the others. Then, holding hands, one of the partners lies down with his back on the floor and the other partner pulls him up by the hands while he lowers himself down onto his back onto the floor, etc. This is a version of Row, Row, Row Your Boat, and the song can be sung during the activity to emphasize the rhythm of this movement in the open system.

The following warm-up exercises are better done with the children in a line formation and the teacher or a child to demonstrate out in front of the children. In the first activity, the teacher or child lies down on one side, keeping the body in a straight line. Lift the leg that is on top (and free to move) straight up in the air; then, lower the leg back onto the leg resting on the floor. This is an abduction pattern of the entire lower limb. Then the teacher and the children roll over to their other side. The teacher should switch around so that she continues to face the children in order that she can see whether they are able or not to lift and hold their leg up on the other side; she is then free to get up and assist a youngster who may be having trouble. In the next activity, have the children roll over on their tummies and kick their legs, with the legs held straight as in swimming. Then the teacher can have the children move their legs apart and then back together; she can have the children move just one leg out to the side and then back to the starting midline position and then repeat with the other leg. The next step would be to bend both knees with the heels coming toward the fanny, and then both knees straightening; then do this with only one leg bending and straightening, and the other leg.

Using either a line formation with the teacher out in front of the children or a circular pattern, warm-up activities for the arms can be done with the children still sitting. A good way to start is to have the children "shake loose", with both arms just flapping in the air, fingers included. Then shake one arm and then the other arm. Before going on, the teacher must make sure that there is adequate space between each youngster, because she then asks them to spread their arms out to the side (at shoulder level) and then return their hands to their laps. Then she can ask that the arm on the side nearest the flag or the windows or other appropriate landmark in the room moves out to the side, holds, and then moves back to the lap. Repeat with the other arm. Next, have both arms go out shoulder height in a forward direction and then one arm out at a time, hands always returning to the lap for the resting position. Then, have the arms come out to the side and then rotate at the shoulders; flex the elbows so that the hands come to scratch the back of the neck. Then,arms back out to the side, shoulders roll back, elbows flex, and the hands scratch the small of the back. Next, from the resting position of the hands in the lap, one arm can do any or all of these movements, followed then by the other arm in isolation. Next, bend both of the elbows so that the fingers come and cover the ears, then both elbows straighten and palms rest on the mat on either side of the child. This likewise can be done one arm at a time. Then have the children stretch both legs out straight in front of them and place one hand on each knee, palm down. Have them roll the forearms so that now the backs of the hands are resting on the knees.

Sitting cross-legged in a comfortable position, the children can now practice certain hand movements. They can wiggle and shake their hands loose at the wrists. They can make firm fists, open the hand in a straight fashion, then reclench and open again. They can practice moving their fingers apart from one another in abduction and then back together again. An interesting way to present this is to describe the fingers as soldiers standing in a row and all the soldiers move away from one another, and then all the soldiers move back together again. The children can practice isolated finger movements. These will best be accomplished at first by letting the children use the other hand to help move each one of the fingers, either into flexion positions by bending the joints of each finger, or in moving them apart and back together again. The thumb can also practice positions of opposition to each of the fingers in various sequences.

There are more vigorous Warm-Up activities that can also be done with groups of children, either in a circular or straight line formation. Such activities would be to run in place or do deep knee-bends or squat down on the haunches, holding this position for a few seconds and then returning to the standing position. Then the children can jump down into the squatting position, put the hands between the feet spaced slightly apart, and then jump with the feet backwards into a push-up position; then jump feet back to hands, hold, and jump to the upright standing posture. The children can also practice standing on one foot and hopping up and down in place, then shifting to the other foot, holding, and hopping up and down in place. Finally, the children can practice two-footed jumping by trying to jump with the feet high up off the floor.

In all of these activities, the teacher should be sensitive to speed, duration, and rhythm. Movement patterns of the limbs or the entire body can be done very slowly requiring much control, or can be done rapidly requiring easy integration and perseverance. Basic rhythms like stop and go, holding still and moving, and performing movements in timed patterns are important. If the teacher wants even, reciprocal rhythm, she can set this tone with the use of phonograph records or just counting or repeating the verbal directions (i.e., legs apart, legs together) in a sing-song manner that typifies the rate at and rhythm with which she wants the children to move. All of these variations tend to heighten the interest of the children participating. With all of these Warm-Up activities, as the children gain in expertise, the teacher can remain as a member of the group and select various children and allow each to have his turn to call the signals for movement.

2. Basic Rhythms and Animal Walks

Introducing children to basic rhythms and the movement patterns associated with these basic rhythms can be accomplished in a variety of ways. When we talk about basic rhythms we are referring to stopping and going, fast and slow, heavy and light, even and uneven, and soft and loud. Rhythms produce sounds and, conversely, sounds produce rhythms. Rhythms need not have the accompaniment of records, piano, or rhythm band instruments like cymbals, tamborines and drum sticks. Initially the children can clap their hands or stamp their feet. At first, the children sit still and only move their hands or their feet. When they have so learned to listen and move appropriately to the sound, more freedom of total body movement can be introduced. Very often teachers are unhappy about a group of boys and girls up on their feet who begin wandering all over the room and there is little relationship of the movements to the sound presented. It is for this reason that it is wise to introduce rhythms with the children anchored (by sitting) and only certain parts of their bodies are involved with the sound stimulus.

Once experience is gained in moving a segment of the body in response to a specific sound stimulus (such as loud, soft, fast, slow, stop, go, even, and uneven, etc.), the children can proceed to use the total body. They can be encouraged to stand still and move the body up and down, bend over to form a wicket and then straighten up to the starting position. Next, the basic gait pattern of walking and its variations can be introduced. We can walk in traditional heel-toe patterns, on our tiptoes, or on our heels; we can walk forward, backward, and step-together-step to the side. Then, we can introduce running as a speeded-up modification of the basic walking gait. Then skipping and finally galloping, where the heel-toe skip of one foot and then the other imitate the sound of four horses hooves. Other extensions of the basic gait would be patterns such as hopping on one foot or jumping forward with the two feet together. Movement can be varied infinitely in response to various sounds. Besides moving their total bodies (or isolated parts of their bodies) in specific ways to specific sounds, the children can create a rhythm from a verbal command, such as go fast and slow, heavy and light.

In all of these rhythmic activities, the element of listening is fundamental to the success of the children but it is often difficult for the children to evaluate their success when all of them are moving at once. One evaluation procedure that has been successful is for half the children to sit down on the floor while the other half of the group moves. The children who are sitting on the floor can give the verbal commands and watch to see whether or not the children in movement are responding accurately to the verbal command or to the rhythm created by the clapping of hands. The teacher also can ask simple questions which help the children evaluate whether or not the response has been carried out by those moving. Another variation to help evaluate the group's level of awareness of varied rhythm is to have two or three children move at a time as one child gives the specific rhythm to be followed.

Animal Walks - In the teaching of basic rhythms, teachers often introduce animal walks. These provide the children with good exercises in body organization and motor planning. The most traditional Animal Walks are (1) the Elephant Walk, (2) the Giraffe Stretch, (3) the Rabbit Hop, (4) the Duck Walk and (5) the Horse Gallop.

The Elephant Walk the children are told is made by the large animal with the long trunk who walks with slow heavy steps. The children can portray this by clasping their hands together with the elbows straight, bending over at the waist and walking slowly with the feet wide apart. The children are helped to take slow exaggerated steps and swing the arms from side to side in time with the feet as we imagine the elephant might swing his trunk. This becomes an over-exaggerated, heavy beat or rhythm.

The Giraffe Stretch is portrayed by having the children clasp their hands together and then stretch their arms up in the air over their heads, keeping the elbows straight. This posture simulates the long neck of the animal. The children step along slowly, walking on their toes and keeping the knees straight while stretching upwards all the time. The step is slow and controlled because of the tiptoe walking with knees straight. The beat is light because only the tiptoes are in contact with the floor and the body is trying to reach upwards off the floor.

The Rabbit Hop on all fours is much like that movement of the frog. . The children portray this gait variation by squatting down and placing both hands on the floor in front of them. Then, leaning their weight forward on their hands, they lift both feet simultaneously up off the floor and pull them up to their hands. Then reaching forward with the hands repeat the pattern. This involves complex body organization and control because movements of the two upper and lower limbs are alternated. The beat of the rabbit hop is usually syncopated, but is not fast.

The Duck Walk is portrayed by the children when they squat down on their heels with their hands on their hips and step along maintaining this squatting position. As they move along they waddle from side to side because they need to shift the body weight in this awkward position in order to clear the foot from the floor and move it forward. The rhythm here is faster than the elephant walk, but slower than a normal walking cadence. This posture is even difficult for children to maintain for too long a period of time, and extremely uncomfortable for adults.

The Horse Gallop is a fast rhythm that necessitates precise movement patterns of the legs and feet. Though both legs are in motion at the same time, they are not doing exactly the same thing at the same time (see description of galloping above). It is the distinct heel-toe beat bilaterally which gives the syncopated beat.

Animal walks are really a sophisticated blend of rhythm, intergration of body parts and mot or planning. Experience watching the animals and the concepts of size, weight and speed are involved as well. Teachers who may not have had much success with animal walks in their classes may have been dealing with children who were unable to synthesize all the elements necessary to perform. In these cases, the children can practice various components of the walks before being asked to put them all together. The components would be the ability to sustain tiptoe walking, to sustain deep knee squatting, to remain standing still bent over at the waist or swinging the two arms from side to side so as not to lose the standing balance. The Warm-Up exercise of squatting (placing the hands on the floor in front of the feet, stretching the legs out behind in a push-up position then jumping with the feet back to hands) could be tried before the Rabbit Hop.

3. Games with Chairs

Children moving, chairs stationary - Clear a wide open space in the room and have the children bring their own individual chairs to this area, place them in a row facing the teacher and each sit down. The teacher should caution the children to leave some space between each chair, enough to walk through. This is usually achieved after they've lined the chairs up by saying "everyone walk around his chair; if you bump into your neighbor then you haven't quite enough room, so spread apart a little more". The teacher may need to assist the children in positioning their chairs correctly the first two or three times this game is played.

The teacher gives instructions to the group to watch her and imitate her movements, as well as listen to the following commands. "First, sit in your chair facing forward, looking at me. Fine, now everyone turn to the side so you are facing the windows"(flag or piano or other easily recognizable place). At this command, the teacher swings half way around in her chair and faces the exact direction she requested. "Next, swing around and face the other wall"(or give a more distinct landmark 180° turn to the other side). "Now turn and face forward. Next, stand up in front of your chair, now turn around and face your chair, now put your hands on the back of your chair, kneel on your chair, stand up on your chair, kneel down again, now stand up again, let go and straighten up tall, now slowly turn around to face my chair." The teacher should caution the children that, if they move too quickly, they are liable to tilt their chair. Once facing her chair she can have the children jump down and resume their seats. The commands should all be given slowly, with lots of time to respond and a lot of visual cues.

In like manner, the teacher can ask the children to stand up in front of their chairs, face her, turn towards the windows, and then keep going and walk around their chairs back to the starting position; then turn in the opposite direction (180°) and continue walking around the chair until they get back to the front of it. Further directions are to stand up in front of the chair, turn around and face the chair, kneel on the chair, then sit on the chair (so as to straddle the chair). At this point the children will not be facing the teacher so she will quickly carry her chair around behind the group and face them while straddling her own chair. Next, have the children swing one leg up and over the back of their chair so both legs are now together and swing around and face front. Teacher now returns to the front of the class.

Still further directions would be, go stand behind your chair, beside your chair, now on the other side of your chair, now in front, or stand on your chair in the middle of the seat. A variation with this game is to have the children put their crayons under their chairs, their shoes on top of the seat, some small article like a book or block behind or in front of or beside the chair, etc.

Throughout all of these maneuvers the teacher's directions should be short, clear and precise. She may need to continually remind the children that the chair is to stay still and only they are to move. If anyone bumps into a chair she should remark "someone moved his chair, he should be more careful, move slower etc." The teacher should initially perform each direction with the children as she gives the verbal signal for action. Later the children can learn to do the sequences just from single, then two level, then three level verbal commands.

As the children become familiar with the game, the teacher can pick a leader and change places with him, thereby welding herself more closely with the group. Additional monitoring of the movements comes through questions such as, "leader, are they all doing what you asked them to do? Who moved the quickest? Who wiggled their chair?" etc. The children can alternate taking turns as leader in order to keep the interest level high, as well as for the teacher to note if the leader really has associated the correct spatial directions with the correct verbal signal.

Children semi-stationary, chairs moving - The arrangement for these games is the same as above. Have the children stand up and go and stand behind their chairs, facing the teacher. The children are told that they are to keep their feet still on the floor and move their chairs. "First, pull your chair over beside you, the side nearest the window" (flag), etc. "Now move your chair around to the other side of you; now move it in front of you, now behind you, now pull the seat close to you and sit down carefully." If the children tend to keep shifting their feet on the floor and moving, the teacher can draw a big X with chalk and remind them to stay on the X at all times. This game can also be played with the teacher selecting a leader from the group and rotating it so that each child has an opportunity to be leader.

Children moving their chairs - Another variation of chair activities is to have the children and the teacher line their chairs up at one end, and themselves at the opposite end of the room. On verbal direction from the teacher, all go forward to pick up their chairs and move them to a specific area of the room requested by the teacher. The preferred way to carry a chair is one hand grasping the edge of the seat at about the middle and the other hand, the back of the chair also in the middle. The teacher first sets the pace and the children follow her verbal instructions combined with the visual cues derived from watching her movements in space. The teacher can move to all four sides of the room, the four corners of the room, and the middle of the room. The children can be asked to arrange their chairs in a straight line across the middle, along one side of the room, or even in a diagonal pattern from one corner to another. The chairs can further be used to form a circle or a square, etc.

When the children become proficient in moving their chairs, the teacher can try to fox them by giving the verbal direction to the group and then deliberately moving in a different way. This will only be chaotic, however, if the children aren't ready yet to process and evaluate conflicting information. The teacher should always alert the youngsters when she is going to try to trick them so that they will attend carefully to the verbal direction before moving.

The above games with chairs are precursors to the ultimate in chair game, Musical Chairs. (See Circle Games in the Task Analysis Section.) Children do far better at this complex game if they have first completed more fundamental movements in relation to the stationary chairs.

4. Rope Games

The children should be seated on the floor in a circle, with the teacher seated as a member of the group. The teacher takes a 30 foot clothesline, ties the two ends together, and throws it out to the children asking them to grab hold of the rope and move themselves to round it out. She asks them what they have all together as a group in their hands...... a rope circle. It is usually easily seen, but it may not be; if not, then the teacher tells them that she has made a circle of rope. The teacher then asks the children to hold onto the rope with two hands and tells them they are going to play with the rope in a variety of ways.

First, have the children pass the rope through their hands so the rope circle begins to move around. The children should be sitting still just passing along their piece of the whole so that the circle is kept in motion. Then, the teacher introduces the direction of "up" by asking the children to put the circle up in the air; everybody helps at the same time by stretching their arms up overhead. The teacher next asks the children to move the circle down on the floor in front of them.

Then, with the children standing, the teacher can introduce the directions in and out. She can have the children stand on the outside of the circle, step with both feet into the circle, and step with both feet out of the circle. She can ask the children to jump into the circle and jump out of the circle. She can ask the children to put one or both hands into and out of the circle. She can ask them to put one hand and the foot on the same side of the body into the circle and then take them out. She can ask for cross extremity patterns, i. e., right hand and left foot in and out. She can ask the children to walk around the outside or the inside of the circle, or walk on top of the circle. She can ask the children to sit back down on the floor on the outside of the circle and pick the rope up off the floor and move themselves under the circle so that they move inside the circle, then stand up and step back over the circle.

A variation of Rope Games is to give each child in the group his own length of clothesline (approximately 6 feet long) and have him tie the two ends together to make his own circle. Then the group can spread out on the floor and each child follow the specific directions given by the teacher within his own individual rope circle. Some children can then be selected to give a motor demonstration without verbal symbol accompanying or a verbal command without motor demonstration and evaluate whether the other group members can follow the demonstration or direction. The children taking turns at this will often turn up an innovation or two that nobody has entertained heretofore.

The next variation with the rope is to have the children put aside their own ropes and come back to the big rope circle with the teacher. Now the teacher talks about and shows the children that if she unties the two ends of the rope, she can change the circle to a straight line. She then asks the children to line up beside the straight rope line on the floor. Once again the process of jumping over the straight line, putting an extremity over the line, lifting the line up, passing it over or under themselves can be practiced, just as with the circle. Then the children can move back to their own individual circles of rope, straighten them out and follow directions with their own rope lines. Again, the children can take turns being the leader and giving directions for movement. The movement of the children in relationship to a diagonal or slanted line, can be introduced. This is an interesting new dimension at this age level.

Other elements of space, such as speed and quantity, or force can be woven into the learning experience as well. The notion of speed can be introduced if the circle is moved slowly or fast. The children can also move themselves in relationship to the circle slowly or quickly. The concept of quantity can be integrated by having one or more children placed inside or outside the circle, etc. By using rope games, the teacher can also give the children experience in dealing with the notion of force. To do this, divide the children into two groups. Place the clothesline on the floor in a straight line with a marker indicating the mid point, and have each half-group sit beside the clothesline between their end of the rope and the middle. The half-groups now will be facing one another. Have them pick up the part of the clothesline that is nearest to them and begin to pull on the rope. This is really a sit down version of the old Tug-of-war game. Once the children have managed to learn to pull in unison and not let go of the rope, they can play Tug-of-war in the standing position as well.

A fourth variation for Rope Games is to take four pieces of rope and assemble them into a square on the floor. The teacher can now tell all of the children to go inside the square, or to stand along the inside or outside of the four sides of the square. The teacher can split up the group by asking one child to go to each of the four corners on the inside of the square and four others to position themselves at the outside of the four corners. The children can take turns sending their classmates to a specific area or position on verbal signal and the accuracy of the moving children can be evaluated by the other youngsters awaiting their turn. To vary these sessions even more, the teacher can design several squares and circles and involve more children moving at the same time. This naturally should not be tried until the group has had sufficient practice at more fundamental levels. The additional element of more children moving simultaneously in the open system will require increased control and motor planning on the part of each child.

C. TEACHING SPECIFIC SKILLS

1. Skipping

Skipping is an integrated activity that, according to Gesell, emerges approximately at the age of five. However, it occurs only after the accomplishment of a series of precursor skills at earlier age levels.

The following is a brief description of the sequence of these precursor skills. Between the ages of one and two, most children learn to walk independently. As their gait becomes more stable and they are easily able to maintain an erect posture, they begin to accelerate this basic walking gait pattern into running activities. Between two and three, and beyond, the child gradually develops the power and rhythm to run easily. At age three the child usually learns to jump, both feet together. This is a parallel bilateral activity involving simultaneous bending of the legs and then straightening to push off from the ground. Also around the age of three, the child is beginning to be able to stand on one foot for a very short period of time. This ability to balance the body on either foot will enable the child at approximately age four to be able to hop. Hopping could really be called a unilateral jump; many children do not know the verbal label but hop when asked to "jump on one foot." Hopping requires the same type of bend and push off as jumping, except that an increased amount of strength and balance is needed to perform on one foot. Also at age four, the child is learning one-sided or "lame duck" skipping. Here the child steps and hops on one foot but only steps with the other foot. This activity is often performed prior to the more integrated bilateral skip that occurs at age five; thus, lame duck skipping is normal performance for the four year old child.

Learning to skip thus depends on the above skills which develop gradually in the first five years of life. Since skipping is a rhythmic "step-hop, step-hop" pattern, one would not attempt to teach a child to skip who was unable to jump, stand on one foot or hop. Skipping is really a very highly integrated activity, requiring the concept of the push off necessary for the jump, being able to perform it on one leg as in the hop, and more important being able to integrate this by hopping on one foot and then by hopping on the other foot. This requires considerable balance and coordination. Learning the skipping pattern does not come easily for the child with inefficiencies in the gross motor area.

The child who cannot skip can be brought to the point where he is ready to learn. As has been shown above, jumping and hopping are the primary prerequisites for skipping. Jumping and hopping can be reinforced in the classroom and playground in many ways - jumping off objects, jumping over objects, jumping up onto objects (See Jumping with two feet which follows). Jumping and hopping both can be incorporated into games such as Follow the Leader if the leader initiates these specific movements. Games such as Hop Scotch can initially be performed by jumping through a simplified Hop Scotch pattern. As the child acquires more skill in this activity, he can begin to use the hopping pattern. Since hopping is a unilateral activity, hopping on both right and left feet should be encouraged. Again, in Follow the Leader games, the teacher can encourage hopping on one foot and then on the other. Relay games can involve such actions as hopping to one object and jumping or running back, etc. Body and spatial awareness at an action and verbal level can be developed by having the child imitate others' actions and imitate his own actions on verbal command. When these basic prerequisite skills of jumping and then hopping are well learned, the child will be more ready to learn to skip.

As discussed above, skipping involves a step-hop on one foot, followed by a step-hop on the other foot. This step-hop pattern can first be learned with the assistance of a bar attached to the wall (or other object), within the classroom. This provides elements of assisted movement which simplifies the task by reducing the amount of balance and coordination that is required in the complete skipping pattern, and giving the child a chance to learn the pattern before these other elements enter in. The children should initially line up facing the bar, holding onto it with two hands. They can learn the step-hop pattern with the support provided by this bar. This support can then be reduced by having the children turn sideways to the bar and use only one hand for support. The children can then turn around a full 180° so that the other hand is used as an assist in learning and performing this step-hop pattern.

When taking completely away from the children the support of the bar, the teacher should demonstrate the activity. The teacher should take a step and then hop on that foot, take a step on the other foot and then hop on that foot, repeating this slowly in an alternating fashion and reinforcing it verbally by saying "step-hop, step-hop". The teacher should next ask the children to perform this activity, again reinforcing their movements through saying "step-hop, step-hop". Once learned, skipping can be incorporated into many activities within the classroom. Again, games such as Follow the Leader and Relay Races may be utilized. Skipping can also be incorporated into many activities within the open system, such as A Tisket, A Tasket, or other circle games in which the child can be asked to skip instead of running. The emphasis is thus on stimulating skills which the child can use and which foster the childs total development of body awareness and control - not on learning the isolated skill of skipping.

2. Jumping with Two Feet

Jumping with two feet can only be fun when children can bend and straighten their legs quickly. If children are slow in performing such flexion and extension patterns, they are not going to be able to cushion the impact of landing from any considerable height onto the floor or ground. Children must also have developed a feeling of ease about being off the ground unsupported, and about falling down.

The progression to teach this skill is as follows:

1. Have the children stand on the floor (or ground in the playyard) in a circle formation. A tumbling mat or padding is not necessary. With the teacher as part of the group and everybody holding hands, the teacher gives the following verbal direction as she performs.. "Everybody bend down slowly." When everybody is down holding their balance in a deep knee (squatting) position, the teacher says, " now everybody straighten up". This is repeated slowly three or four times. Next, the teacher informs the group that now they are going to do it faster and faster so they must pay attention and listen very carefully. She now gives the direction for down and up more quickly and pretty soon there should be a group that is bobbing down and straightening back up rapidly.

2. The group can begin to practice bouncing so that each child leaves the floor. The teacher's verbal directions should be, "Bounce up...bounce up...bounce up" because, of course, their weight and gravity will bring them down without any need for verbal symbol.

3. The teacher instructs the children to listen carefully because they are going to combine bouncing with deep knee-bends and straightening. With the childrens' careful attention, she can begin to vary the patterns; some bounces, some deep knee-bends, some straightening up.

4. Have the children spread out into a larger circle, dropping their hands so that they are now standing independently with enough distance between each youngster so that their arms won't touch. The teacher then repeats the previous sets of deep knee-bends, asking the children to place their hands palms down flat on the floor in front of them close to their feet; then straighten back up. Bouncing is

then introduced and then an alternation of bouncing along with deep knee-bends and straightening on verbal command. The teacher should demonstrate as a member of the group or have one competent child do this.

5. Instruct the children to sit down on the floor in a circle near a small flight of stairs. One by one the children can go over, get up onto the first step and jump off. As they jump off, even though some may be very skilled, they should be encouraged to land in a deep-knee position with their hands on the floor, rather than landing bolt upright. The teacher should be close to the step as a safety precaution. Each youngster is encouraged to take his turn and practice. Even though the group may be very skilled and accomplished at jumping from relatively low heights, there should be considerable practice before jumping from anything in the room that is higher off the floor.

6. In any kindergarten room, there will automatically be children's chairs, boxes, or low tables with a number of varied heights off the floor from which to practice jumping. Once the children have had initial practice in jumping from these heights, the age old game of waiting until the group counts one, two (or on your mark, get set), go (or jump) can be added as verbal signals. This increases the fun for the entire group participating.

7. Once the children have moved up to jumping from a small chair, each child can bring his chair into a wide circle and practice independently, yet simultaneously. All the children can step up on the chair, turn around on the top so that they are facing forward into the circle, and jump on command given by themselves in unison or by the teacher. The teacher must remember that the circle should be a large one, because the children become good at propelling themselves a considerable distance and the teacher does not want them jumping into each other. In this case, it would be better to line the chairs up so the children would all be jumping off in the same direction.

Most kindergarten children can easily learn to jump from heights of up to six or eight feet. However, the purpose of the above is not primarily to teach such an accomplishment. The goals are rather to increase the ability of the child to plan motor acts, develop body control, and feel comfortable when he is off the ground. Psycho-neurologically inefficient children need help and encouragement to move efficiently in space. They tend to be constricted and fearful or impulsive, and consequently unaware of the consequences of their motor acts. Increasing their gross motor skills allows them to engage in physical activity with other children. Teaching them to plan motor acts and execute them in a smooth patterned fashion helps them become better organized individuals with a better understanding of their spatial environment.

3. Somersaulting

The somersault is a basic tumbling activity. The children should be introduced to somersaulting only after they have been made comfortable in rolling along the floor in a horizontal posture. The surface to be used should either be a tumbling mat or, if out-of-doors, a grassy area. If there is no mat available, then a mattress or bed pillows placed side by side on the floor can be used. The sequential steps in teaching somersaulting are as follows:

1. Line the children up along the edge of the tumbling mat. If out-of-doors, line the children up in an area of the play yard where there will not be other children running or balls being bounced into the area, and where their attention can be focused on an area for the somersaulting activity. Place a small chair, footstool, or sturdy cardboard box (roughly 18 or 20 inches high) at the head of the tumbling mat. Ask one of the children in the group to volunteer to start off or move down the line with the children taking turns in succession. The first child should come to the chair, sit on it, spread his feet about 12 inches apart, bend over, then place his hands just inside his feet (palms down) flat on the floor, then bend over even further and place his head between his hands. The teacher then asks the child to straighten his knees and bend over more, lifting his fanny up and rolling forward off the chair seat. The teacher should position herself on her knees beside the youngster and use her hands if necessary to help him tumble off the chair correctly. Depending on the ability

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of the group, it may take three, four or even ten practice sessions for each youngster in the group.

2. When the children are all able to tumble forward off the chair with control and efficiency, then the height of the seat can be lowered. A smaller box or several good sized wooden blocks or one or two books can be substituted. Try to lower the height by about one half. The children then can practice the same roll off as many times as it takes to get the action of straightening the knees, lifting the fanny upward and rolling forward. This is a coordinated pattern of knees, hips and ankle joints and some children may need extra individual help and practice during free play or other periods. Once the children are able to accomplish somersaulting at this height, the height can be cut again in half by using just one block or a rather thick book. Practice is provided at this position until the action of hips, knees and ankles in a forward rolling pattern has become quite well established for each youngster.

3. The final step is to have each child come to the head of the tumbling mat with all props removed, squat down, place his feet 12 inches apart, squat in a deep knee bend, place his hands on the inside of each foot palms down flat on the mat, put his head between his hands just as he did when he was sitting on the chair, and push off to roll forward.

   NOTE: It is important for the teacher to make sure that the top of the head is in contact with the mat (rather than the forehead or the back of the neck before the child does his push off; otherwise, there is an unpleasant sensation because the neck takes too much pressure. By placing the very top of the head between the hands on the mat, then rounding the neck as they move forward, a smooth and comfortable movement is attained. If the head does not contact with the tumbling mat, this is an advanced forward flip and is rarely seen performed by young children.

4. Jump Rope

Jump rope is an activity easily and quickly learned by most children, and usually one that children learn on their own. The child who has difficulty integrating his body movements as well as correlating them in response to the movement of another object will have difficulty in Jump Rope. In order to present this complex activity to a child with such difficulties, the activity must be broken down into its component parts so that the child is gradually able to integrate the components into smooth, efficient, complete performance.

The materials needed are a long rope, approximately 10 to 12 feet in length, to be held at each end by a child or adult while another child jumps in the center portion of the rope; a short rope, 4 to 6 feet in length, to be used by the child who has the concept of jumping and is able to swing the rope himself. The following are the sequential steps in learning this activity:

1. The 12 foot jump rope is held on each end, usually initially by one adult and one child. The child is asked to jump over the rope as it is lying flat on the ground. The child who is having difficulty jumping over the rope when it is flat on the ground needs practice in jumping before he is ready to go on with such a complex task as jumping rope.

2. With the rope held in the same manner as above, the rope should be drawn slowly back and forth while the child is encouraged to jump over it as it comes to him. The child thus has to adjust his movement to the movement of the rope. Many children will initially jump over the rope one foot after another; jumping with two feet over the rope together should be encouraged as this is later necessary for jumping when the rope is swung. The child's performance should be closely watched if he is having difficulty. Usually, children who jump one foot after another, are able to jump over the rope with two feet together with encouragement. Some children will have difficulty adjusting the movement of their bodies to the movement of the rope. Their responses may be so delayed that, by the time they get their bodies into motion, the rope has moved to a different position. These children need practice timing their movements to that of the rope.

3. Raise the rope slightly off the ground and have the child jump over the rope with two feet together. Activity levels 2 and 3 can be varied and intermixed so that the

child has to look closely at the position of the rope in order to adjust his body position to get over the rope successfully.

4. The following activity can be performed with one or many children. The adult should stand in the center of the circle with each of the children three to four feet from her. This activity can be performed out-of-doors with a circle drawn on the ground. The adult stands in the center and holds both ends of the 10 to 12 foot rope in one hand so that the rope is doubled. The adult swings the rope along the ground in a steady circular pattern and each child is required to jump over the rope as it comes to him. This requires each child to remain in one place. With activity levels 2 and 3 on the other hand, the child is learning to look at the rope and adjust his movement to it, but he can move from one spot to jump. Activity level 4 is on a higher level than activities 2 and 3 as the child not only must adjust his movement to that of the rope but he must do this while maintaining himself in one spot. For the child who tends to wander from his place in the circle, a cross drawn on the floor will help him. The child who is having difficulty when the rope is turned quickly may perform better if the rope is turned at a slower speed. The speed of turning should be varied. One indication to the teacher that a child is ready to go on to the next level will be that he is able to jump over the rope successfully at varying speeds, as well as when there are several other children in the circle. Some children may perform better individually because they are easily distracted by the presence of other children in the circle.

5. The child should now be ready for conventional rope jumping with two people taking ends of the rope and turning it while the child jumps over it as it sweeps the ground. This activity can be presented either with the child facing the rope or facing one of the rope turners (sideways to the rope). Initially, the child may be able to jump over the rope two or three times as it is swung, but may have difficulty adjusting to the rhythm of the swinging of the rope so that he speeds up or slows down his jumping rhythm and gets out of phase with the rope. The most efficient jumping pattern

is one in which the child jumps over the rope, and then takes a small jump between as the rope swings, and then jumps over the rope again. This little jump in between usually enables the child to set up a good rhythm for jumping. Again, it is sometimes helpful to draw a cross or circle on the ground to indicate where the child is to stand.

6. After mastery of jumping while the rope is turned for him, he may be ready for jumping with the shorter rope with the ends held in his own hand. The child must be able to swing the rope himself and adjust his jumping to the swinging pattern he has established. This is a very complex task. Typically, the child initially separates the movement of the arms and legs. He brings the rope from in back to in front of him and then almost as a separate activity jumps over the rope as it is resting in front of him. As a precursor to being able to swing the rope himself, the child should have a turn at swinging the long rope and learn to adjust his arm movements to the arm movements of the teacher at the other end. This is difficult for some children, they swing much faster or much slower than the adult and have difficulty adjusting to the movement that the adult has initiated.

5. Roller Skating

An easy progression for youngsters learning to roller skate, is to provide them first with the experience of the weight of the equipment on their feet in a situation where they need only focus on this factor. The teacher can introduce roller skating indoors by having the children walk with the skates on a tumbling mat. The tumbling mat damps the rollers and allows for greater control. Another way to do this would be to introduce roller skating out-of-doors on a grass or dirt surface.

After the children are comfortable walking with the skates on the grass or tumbling mat, the teacher can then move them to a firmer surface. If a child seems to be having trouble, the teacher can have the youngster take one skate off and go along on the firm surface by pushing with this foot. This allows him to get acquainted with the pick-up in speed of the wheels on the hard surface.

When the children are able to move back to two skates, the teacher can hold onto the youngster's clothing firmly, or take a belt or several neckties and put them around the youngster's waist in a harness arrangement. It is important here that the teacher does not hold onto the youngster's hand. He needs his arms and hands to balance; if he stumbles or falls, then those hands are free to help him break his fall.

APPENDIX

BODY AWARENESS AND CONTROL SECTION

APPENDIX: RESULTS OF GROUP DIAGNOSTIC PROCEDURES

Names	Movements Related to moveable objects (Target Activities)	Movements Related to the Force of Gravity (Locomotor Patterns)	Assisted Movements (Obstacle Course)	Spatial Concepts (Simon Says)
Jimmy	Good	Good	Good	Good
Walter	Poor	Poor	Good	Fair
Danny	Fair	Fair	Good	Fair
Dominic	Fair	Good	Good	Poor
Eddie	Fair	Fair	Good	Good
Bobby	Poor	Good	Good	Fair
Georgette	Poor	Poor	Fair	Fair
Barbara	Fair	Fair	Fair	Fair
Debbie	Fair	Good	Good	Fair

ANALYSIS OF CHILDRENS' PERFORMANCE

Within this class, Dominic, Jimmy and Debbie exhibited the best functional skills and used these skills more effectively than the others. They continued to make progress during the year, so as to maintain their ranking at the end of the year. The children demonstrating the most difficulty in the area of body awareness and control were Georgette, Walter and Barbara. Not only did they show deficits in skill but were also extremely disorganized. Located in a middle ground between these first two groups were Bobby, Danny and Eddie. For the most part these children demonstrated mildly inefficient skills, but functioned fairly well within their environment. Bobby is a child whose performance fluctuated a great deal throughout the whole year. All of the children in this middle group made progress through the year.

The diagnostic materials revealed important information relating to the childrens' level of motor skills, motor planning, and spatial awareness. We will briefly discuss each child's performance in these three areas and the general level of curriculum planning to improve body awareness and control of the group.

Jimmy--Jimmy's overall level of isolated gross motor skills is good when his concentration is wholly upon controlling his body in space. However, excessive speed and inattention often make his performance appear clumsy.

Walter--Walter demonstrates inefficiencies in skill, with evidence of inability to motor plan effectively and with difficulty maneuvering and identifying himself in spatial spheres.

Danny--Danny demonstrates depression of basic gross motor skills. He seems to be able to plan his movements adequately, even though the skill level is mildly inefficient. Excessive speed when performing interferes with efficiency.

Dominic--Dominic demonstrates fairly good motor skills, motor planning, and spatial concepts. He has difficulty particularly when he has to respond to verbal direction and does better with the actual demonstration.

Eddie--Eddie's skill level is somewhat depressed but he uses what skill he has effectively. Motor planning and spatial concepts are adequate for his present level of functioning. He is another child whose performance is somewhat affected by excessive speed.

Bobbie--Bobbie's motor performance is variable. At times, his skills are good - when he is attentive to the task or when performing an activity of his own choosing. It is difficult for him to learn new tasks because he misunderstands; however, when taken through a task and shown, he can learn new activities quickly.

Georgette--Georgette's motor skills were the most inefficient of any of the children within the class. Motor planning is inefficient, her skills are inadequate and spatial concepts are poorly developed.

Barbara--Barbara's performance reflects fair skill, motor planning, and spatial concepts, but it was difficult for her to sustain her attention and direct her own activity.

Debbie--Debbie's skills lie within the average range. She would seem to be able to plan motor movements efficiently although performance of motor skills is somewhat unrefined. Spatial concepts are fair for her age.

Since all of the children demonstrated significant inefficiencies in the use of basic motor skills, as well as problems in motor planning and consistently poor spatial concepts, special curriculum was planned for implementation with the group. The environment within the classroom had to be structured in order to contain and control the children so that the activities presented could have meaning for them. Some of the children had difficulty moving their chairs from one part of the room to another. When changes of activities were made, the teacher initially asked the children to move their chairs one at a time. This reduced the confusion and enabled the children to perform more successfully. Some of the children had difficulty sitting in their chairs and sometimes fell out of them, making it difficult for them to attend to the task being presented. Such distractions were particularly avoided by having the children sit on small mats on the floor. This helped define the area in which to contain themselves.

When it came to presenting gross motor activities, it was necessary to plan a program that would, at first, give them practice in assisted movements as well as practice in rather elemental locomotor patterns and activities related to moveable objects. Movements related to the force of gravity which involved a great deal of balance and body equilibrium, as well as activities in the open system, were difficult for most of the children. When activities in the open system were attempted, they had to be presented at a very fundamental level and under highly structured conditions.

SECTION TWO: VISUAL-PERCEPTUAL-MOTOR

Chapter One

FRAMEWORK FOR LOOKING AT VISUAL-PERCEPTUAL-MOTOR FUNCTIONING

Much confusion arises from the deluge of terms used by various professional persons in reference to the visual-perceptual-motor area. It would seem that there are as many different interpretations of these terms as there are people employing them. Visual and motor skills have long been a concern of the teacher. But it is frequently difficult to relate the mass of terminology, testing and remedial material presently available to the every day classroom curriculum. We feel the teacher need not drastically change her traditional curriculum, nor become immeshed in a mass of formal tests or swamped by a confusing array of activity worksheets. Rather, she must evolve a meaningful framework for viewing visual-perceptual-motor functioning within her own classroom curriculum. With such a frame of reference, she will be able to look at traditional activities in a new light. Hence, rather than changing to "new" activities and materials, she may simply select and properly sequence many of those activities with which she is already familiar. The teacher's traditional role of observer, interpreter, and guiding force should not be lost.

There are several areas basic to efficient visual-perceptual-motor functioning. Difficulty or inefficiency in any one or a combination of these will affect performance. Although these areas do not follow each other successively, but rather develop simultaneously, it is beneficial to separate them in an attempt to determine where inefficiencies exist. Further, by outlining a logical order of skill development in these areas, it is then possible to modify a particular inefficiency before allowing the child to attempt integration of this skill into higher and more complex levels of functioning.

The framework for looking at visual motor functioning is divided into three main sections: I. Basic Sensory Awareness and Discrimination; II. Basic Visual-Motor Activity; III. Advanced Visual-Perceptual-Motor functioning. While skills in all areas continue to develop throughout the child's growing years, we feel that those areas mentioned as basic are the foundations for performance at the advanced levels. Difficulty at an advanced level, however, may not always be due to inadequacies on a basic level, but rather to problems of integrating basic skills. At times, visual skills may advance and be integrated on a higher level than motor skills or visa versa. Development of visual motor functioning is spiral in nature. There is a continuous progression towards more complex tasks with emphasis at one point in the visual area, another point in the motor area and a constant interweaving or blending of these areas throughout the developmental growth of an individual. This interweaving also occurs in the overall development and integration of visual, gross and fine motor, and language skills.

The first two sections within this framework are considered the most basic to general visual-motor functioning in that these are developed essentially during the early preschool years. They will be discussed in detail in this first chapter to provide a background for the third section. The third section is an advanced level in which more direct integration between visual-perceptual and visual-motor skills is necessary. This section will be presented briefly in Chapter One and discussed in greater detail in Chapter Two as the teacher's outline for analyzing and developing a program for Kindergarten children. The teacher is not likely to find many Kindergarten children with severe problems in these first two areas, but she must understand the developmental sequence that leads to Advanced Visual-Perceptual-Motor Functioning. If she does find a child who needs help in the more basic areas, the activities suggested in the first two sections may be of value.

The following is a summary of the framework for looking at visual-perceptual-motor functioning.

I. BASIC SENSORY AWARENESS AND DISCRIMINATION

A. VISUAL

1. Visual Attention and Motility:

The ability to attend, follow, and localize visual stimuli efficiently enough to process information visually. One assumes that acuity of vision is adequate at this point.

a. Localize-- ability to attend to an object for at least 20 seconds.

b. Track-- ability to pursue a moving target in all directions with a minimum of head movement.

c. Scan--ability to localize visual stimuli within environment both from near and far distance.

2. Visual Discrimination & Constancy of:

   a. Form--in both the three dimensional and pictorial representation.

   b. Position--orientation of normal vs. upside down aspect.

   c. Size--in both the three dimensional and pictorial representations.

   d. Color--ability to match primary colors and then graduations of color.

B. TACTILE - KINESTHETIC

1. Tactile Defensiveness/Sensitivity--child responds adequately to every day tactual contact with environment. That is, he is not ignoring meaningful clues or overacting to point of avoiding contact with environment.

2. Kinesthesia--child receives sufficient sensory information concerning position, weight, and movement to achieve efficient control and to monitor fine motor patterns.

3. Body Concept--awareness of individual body parts, their relationship to each other and how they move in relation to the whole body.

4. Stereognosis--ability to discriminate form and texture by tactile sense without the use of vision.

II. BASIC VISUAL-MOTOR ACTIVITY
OR
EYE-HAND COORDINATION

A. MOTOR PLANNING

1. Directional Concepts--control of positional orientations (up, down, front, back, side, over, under, in and out, etc.), first in relation to the body itself, then the body in relation to its environment, and then the relationship of objects to each other.

2. Imitate Motor Patterns--ability to copy motor patterns from demonstration.

3. Initiate Motor Patterns--ability to produce motor patterns without demonstration.

B. MOTOR ACCURACY

1. Unilateral Hand Use--child's ability to use either hand efficiently.

2. Bilateral Hand Use--ability to use two hands in either parallel or opposing action.

3. Hand Preference--consistent use of the same hand as the lead hand for a specific activity.

III. ADVANCED VISUAL-PERCEPTUAL-MOTOR FUNCTIONING

A. ADVANCED VISUAL-PERCEPTUAL TASKS

1. Organization of Forms in Space--ability to see relationships of forms within a specific area. Forms may be arranged in terms of area, quantity, direction or position. Arrangement is affected both by the relationship of the parts to each other and by the parts to the "whole space".

2. Visual Memory--ability to recall (long and short term) visual stimulation in terms of form, detail, position, etc.

3. Sequencing--the ordering of visual elements in time and space.

B. ADVANCED VISUAL-MOTOR TASKS

1. Fine Motor Planning with a Tool--when space or form governs the motor movement (crayon, pencil, paintbrush, coloring, painting or maze).

2. Translation of Visual Patterns into Motor Patterns--copy design.

3. Elaboration of Designs--ability to draw in different size, (big-small), spatial organization (top, bottom, middle, side, on line) and sequence.

4. Integration of Tasks--ability to combine and integrate, that is, to translate visual or auditory stimuli into a sensory-motor pattern to reproduce material in terms of form, size, position and sequence via copy, memory or verbal command.

I. BASIC SENSORY AWARENESS AND DISCRIMINATION

A. VISUAL

1. Visual Attention and Motility

When speaking of visual attention and motility, we are referring to the individual's ability to attend, follow, and localize stimuli for efficient visual information processing. One assumes visual acuity has been checked and is within normal limits, naturally or through correction.

This area begins to develop at birth and becomes increasingly more efficient as the individual successfully experiences and learns to control his attention and motor apparatus. The young infant, in the first few months of life, is able to achieve gross head movement and only a minimum of independent eye movement. As the head control and eye motility improve, a child directs his gaze at specific objects, such as a rattle or the face of an adult and is able to hold that visual attention for longer periods. He is then able to follow a moving target from one side of the crib to the other, as his mother walks around or moves an object at close range. Soon thereafter, he learns to gaze upward and downward. These patterns are closely associated with his total head movements and ability to control head position. As the child develops, he becomes more able to separate eye movements from head movements. This allows him to attend for longer periods of time to any target and to follow this target in its general movement until it disappears from his visual field. As visual stimuli become more familiar to the child, scanning becomes more selective and random eye movements begin to fixate upon objects of interest to him. The child gradually becomes efficient in pursuing visual stimuli with a maximum of eye movement and a minimum of head movement.

This early experimental training and development of efficient eye movement (eye motility) in the young child is essential before the eyes can be engaged as a tool for directing hand movements. A child of kindergarten age should be able to attend to an object for at least 20 seconds, pursue a moving target in all directions with a minimum of head movement, and localize different visual stimuli within the environment (both at far and near distances). If a child demonstrates difficulty in this area, one may provide specific guidance and exercises for the child. If one suspects difficulty in basic acuity or coordination of the eyes, the child should be referred to an opthalmologist.

Suggestions for Improving Visual Attention and Motility--One may begin training the very young or deficient child by placing visual stimuli at close range in different positions in relation to his head: first, directly in front of the child, then, a few inches to the right side and to the left. As the child demonstrates response to these visual targets, one can move them to different locations further from him in both directions so that he must attempt to relocalize. If the child is extremely young, the nature of the visual target is probably of great importance. It should be colorful with some patterning. It should also possess some element of movement or sound, as multisensory stimulation may enhance visual attention. Such objects include rattles, mobiles, music boxes that move, as well as people in his environment who take the time to stand in front of him and talk to him and play peek-a-boo with a small blanket or some other similar size shield. As a child is able to sit up, crawl, and move about, one can increase visual attention and motility by providing toys such as a ball or truck that can be moved at a slow rate of speed past his field of vision, encouraging him to follow these as they come toward him or go away.

Children in the classroom can sit in a row and be asked to look at either a visual target as it is moved by the teacher in different directions or wind-up toys including those which run on a track, or clowns which tumble down a ladder, etc. A variation found to be enjoyable is to flash a strong flashlight on the table surface (around which the children are seated) or on the blackboard in a slightly darkened room. When the light goes on, they are to raise their hand or point to the lighted spot. They also can be asked to follow the light with their eyes as it moves in vertical, horizontal, circular, and finally complex irregular paths. Other activities which achieve the same end include visually tracking bubbles blown from a wand or having two children blow a balloon back and forth across a table top. To help a child improve his ability to scan or search his environment for a specific object, one might play games of "where is the ball" (truck, dog, etc.). The object sought is within the child's field of vision; thus he need not move but just look carefully all around. The same type of game can be used with the older child simply by changing the stimuli to things more appropriate to his interest level (including articles of clothing and household objects). Objects can be placed around the classroom before the children arrive and the children can be asked to locate these without leaving their seat.

One must remember to begin training with activities that require visual attention and motility primarily. The connection between the eye and fine motor movements of the hand will be discussed later. Further, these activities should require a minimum of fine visual discrimination (size, color, etc.), emphasizing rather the visual motility.

One may occasionally find a child with an obvious strabismus (crossed eyes) or other physical eye problem for which he may be wearing corrective glasses or an eye patch. This should not limit use of these activities, as the child is not asked to use one particular eye but rather to coordinate both eyes. Even the child who has difficulty with vision or control of one eye can still benefit from these activities. One should never attempt to control or restrict use of one eye unless it has been medically prescribed.

Thus, even with normal acuity, a child may be inefficient in visual processing. If he is so distractable that he cannot choose or localize a certain stimulus and attend to it for at least 10 to 20 seconds by the kindergarten level, he certainly will be unable to compare, discriminate, or retain sets of symbols adequately enough to function in an academic situation. If he cannot follow a target smoothly with his eyes, with a minimum of head movement, he will probably have a great deal of difficulty in reading and spelling; for without smooth eye movement, he is likely to lose his place and thus waste time and energy in retracing or rereading that which he has already gone over. If he does not have sufficient ability to scan, which is a discriminatory process in which one must discard irrelevant stimuli in favor of the essential visual cues, he will encounter many obstacles to learning. Another factor in this selection process is the ability to discriminate between different forms and objects in order to choose the one which is desirable. This will be discussed in the next section.

2. Visual Discrimination and Constancy of Form

Another visual consideration is the development of discrimination and constancy of its form, position, and size, and the recognition of primary and secondary colors.

It is believed that the child first recognizes three dimensional forms as "wholes", being unaware of the size, color, position, or geometric aspects. One's first concern should, therefore, be with the recognition of three dimensional forms (such as a rattle, spoon, cup, ball) that are familiar to the child. Generally, it is those objects that are functional or have special meaning for him that are recognized first. It is through the manipulation of these objects that awareness of the properties of form begins to develop. The child must also learn that objects which are removed from his immediate visual field continue to exist. It is during the first year to eighteen months that the child begins to search for objects that have been temporarily or partially hidden from view, as he develops a visual memory or image of these objects and the realization that they continue to exist. Memory of form is the basis of visual recognition.

Visual exposure, manipulation, and verbal labelling help reinforce the visual constancy of form. As the child broadens his experience and ability to recognize a variety of forms, he begins to develop some method of generalization or categorization. He also begins to develop specific discriminative abilities within classes of objects. For example, he recognizes cups, both those used by the family and his own cup; he can discriminate between his old toys and new ones, between things which are edible and those which are not, etc.

As familiarity with three dimensional objects increases, he begins to transfer this recognition to pictorial representations of these objects. He enjoys finding and pointing to pictures of objects with which he is familiar. He will probably recognize realistic photograph-type pictures in magazines and books first. A little later, he will develop the ability to recognize black and white and stylized line drawings of these same objects. One will note that recognition of objects and the association with verbal labels usually develop concurrently and thus enhance the development of each other. In addition, as the sensory-tactile area develops, the attributes of objects discriminated by this mode can be added or blended with the information the child obtains visually, i.e., a soft ball or heavy truck. Thereafter, he will not only be able to recognize the form visually but may add a knowledge of the properties of texture and weight from his past experience.

After recognition of three dimensional and pictorial representations has been established, the child begins to recognize the basic geometric shapes. The first shape generally recognized is the circle; then the square, triangle, cross, and later the oval, rectangle, trapezoid, etc. It is this progression from three dimensional to geometric form discrimination that is important in academic readiness.

As the child refines recognition of both three and two dimensional forms, he begins to become aware of a "natural orientation" of objects.

He begins to realize that cups, trucks, dolls, and other toys can be turned up-side-down and then re-oriented to their "correct" position. In doing such, he sees a visual difference between an object in an upright position and the same object turned upside down. This awareness is an important point in the child's development, as it is the beginning of directional concepts and spatial orientation and eventually will play an important part in his ability to follow directions as to the position to place his name on a page and to discriminate between letters and words which look the same basically, except for positional aspects. It is through manipulation of objects that the child is best able to appreciate positional variations. Thus he learns that the form remains constant. It is only his viewpoint of it that changes. This, for example, can be noted when a child wants to fill a cup or container--finding it upside down, he quickly re-orients it to the proper position for filling. The upside-downness of objects is more dramatically or visually obvious than the tilting of them to one side or the other. The young child who is still unable to identify many pictures looks at a picture book as comfortably in an upside-down position as he does when holding it right-side-up. As the child visually recognizes more details of forms, he begins to reposition the book toward a right-side-up position in order to "read" the pictures. But, for a time, the slight diagonal slant of a form on a page goes unnoticed. Development of left-right and diagonal orientation of objects should evolve during the kindergarten year.

Size recognition also proceeds from the three dimensional to pictorial representations. The child initially recognizes extreme differences between things that are very large and very small; then he is able to discriminate the bigger and smaller of two objects more nearly the same size, until finally, he progresses to recognition of intermediate sizes or gradations. This is easily observable in play with nesting cups. At first the child makes only gross discriminations, i.e., that he can put a small cup into a large one but not a large one into a small one. As he progresses, he makes more subtle discriminations, and his random trial and error efforts diminish as more purposeful selection can be made by visual discrimination alone. Likewise, he learns to arrange graduated rings in order on the ring-stack. He also becomes aware of differences in size between familiar objects, such as his shoes in comparison to his father's. Development of size recognition also is enhanced by motor movements and kinesthetic feedback obtained as the child moves himself in relation to objects in space. The awareness of size and the discrimination of intermediate size gradations of three dimensional objects is then transferred to pictorial forms. This exists on a somewhat concrete level at first, i.e., one picture is larger than another. By kindergarten age, he should be able to function on a more abstract or cognitive level where he is able to project the concept of size, i.e., that an automobile is bigger than a dish, regardless of the physical size of the picture on the page.

In respect to the development of color recognition, it is felt that although color may attract the infant's attention initially, this is due not to his recognition of specific colors but to the variation given to forms by colors and their tone qualities. Form and pattern seem to be stronger attention getting factors than color, initially. However, as the child becomes familiar with form and size, he begins to be more interested in color recognition and identification. First, he is able to match the basic colors, then to find colors given the verbal label, and lastly, to give the verbal labels himself. It is not readily clear of what benefit recognition of color is in developing academic skills, but it is certain that this recognition adds to the total repertoire of visual information gained by and communicated to others. It is one of the most commonly used properties (along with those perceived through tactile and kinesthetic senses) in the description of form, and without it the child misses much.

Again, one must remember that early discrimination and constancy of forms, position, size, and color are developing, to some degree, simultaneously and that the elaboration or refinement of each area continues for an extensive period. They have been separated in this presentation to better focus upon the development of each; however, development of one area may enhance development in other areas. The child's interest will fluctuate. At times he will be more concerned with the form or size of objects than in the relative position or color of them. It is, however, only when the child is capable of assessing and integrating all these aspects regarding any one object that he has established a sound basis for more detailed visual discriminative skills.

Suggestions for Training Visual Discrimination and Constancy of Form, Position, Size, and Color--If a child demonstrates particular delay or distortion of skill development in any one of the aforementioned areas, extra training may be necessary. One should first check to be sure that the language component of the discriminatory skill is not the primary factor hindering the child. It is possible that the language symbol may not have any meaning for the child. Thus when one asks a child to point to specific objects, he may fail, not because he doesn't have the ability to visually discriminate size and color, but because he does not recognize the verbal label or properly decipher the command. The problem is likely not one of visual perception if he can match two objects which are the same. Difficulty with position orientation is probably less likely to be influenced by labelling problems, as such an exercise is less often directed verbally at this level. However, do not let the child fail in this area without considering the possibility of language being the basic stumbling block.

Methods of remediation in visual discrimination and form constancy follow the previously outlined stages of development. For example, when a child has difficulty identifying two dimensional pictures, the teacher should revert back to discrimination of three dimensional objects with which the child may be familiar. In exposing the child to these objects, the teacher should talk about them and let the child handle them. When he has become familiar with a variety of objects in this manner, he may be asked to sort them or match the ones which are the same. It is important to begin with objects that are familiar to the child functionally such as a cup, a spoon, a shoe, etc. As he is able to discriminate same and different with three dimensional objects, the teacher may proceed to realistic colored pictures of these same objects, while simultaneously presenting the sample three dimensional forms. Next, the child should be given the opportunity to match similar pictures. Now objects with two variables may be presented to match, i.e., select a large red ball from a large blue ball, a small red ball and a large red ball. Gradually elaborate the number and type of discriminations to include form, size and color. To enhance recognition of geometric shapes, a simple form board with deep insets of the basic shapes can be used. Have the child place each piece (circle first) into the holes. This in conjunction with verbal labelling by the teacher, will provide him with auditory, visual and tactile feedback as to the correct match. Once this is accomplished, one can use two dimensional material such as flannel board shapes or pictures of shapes for matching.

To develop concepts of position orientation, one might begin by reviewing orientations of the body. Can the child follow directions to lie on his back, on his side, turn over, stand up, turn upsidedown, look to one side and now to the other, etc. Further, the teacher can present functional objects which have an obvious "rightsideup". Show the child three cups, one being turned open side down, and ask him which one is different. Ask him to turn it, in order to make it look just the same as the others. Again, manipulation in conjunction with verbalization should enhance development and visual recognition. Then sidedness should be introduced, i.e., that a difference exists between one toy animal facing left and one facing right (although these specific verbal labels would not be used). This procedure can be followed using felt picture pieces and the pictures in the same fashion.

In developing color discrimination, one must present one color at a time. One might start concretely by naming a color for the child and asking him to find other objects in his environment that are of the same color. As he is able to identify one particular color from verbal command, add others, one at a time until finally he is able to discriminate all the primary and secondary colors easily. A good game to play is "I see something red" and see who can find something the particular color named first, or if everyone can point out a different thing of that color.

Once the child has developed recognition of each one of these aspects singlely, commence combining discrimination of two properties together, until the child can make discriminations involving all four aspects of form, position, size, and color at once.

B. TACTILE-KINESTHETIC

1. Tactile Defensiveness/Sensitivity

The term tactile sensitivity or awareness refers to the ability to receive and interpret stimuli through contact and exploration with hands. Through manipulation of objects, a child develops discriminations of temperature, texture, hardness or contour. When such tactile contact is meaningful, it can be integrated with information he gains visually and auditorially, thus, giving a richer and more pleasureable experience. When tactile contact is disturbing or nonmeaningful, there is a tendency to withdraw from or avoid such contact with the environment.

Initially, as the sensory system is beginning to develop, the child's overall physical contact with his environment is either of a pleasurable nature or is an irritant, and usually it alternates between the two. The young child will react by crying or startling to unpleasurable stimuli, such as extreme heat or cold, pain, sudden shift in body position or hunger. This early startle or alerting response is the child's innate reaction to potential danger and is a protective reflex. At first, his only means of coping with the situation is to rely on adults to remedy the problem. Once the child becomes accustomed to certain positional changes or pressures, he no longer responds with such dramatic and undifferentiated reactions. He becomes discriminative and begins to control his more primitive protective patterns. As he becomes more comfortable with being touched, moved, and manipulated he begins to associate physical contact as not only happening to him, but happening to a certain part of his body, i.e., his leg, hands, arms, tummy, etc. He begins to experiment purposefully by reaching out and grasping his own body and his environment. His hands explore his mouth or feet, the blanket or rattle, etc., and tactile exploration becomes an important means of gaining information. There are some children, however, who remain over-sensitive when experiencing body contact. This rejection or disorganization at such a gross level inhibits the refinement of tactile exploration. These are the children who are often irritable and avoid passive or active contact with their environment. On the other hand, there are some children who from the beginning seem to have a diminished alerting system and do not respond to their environment unless contact is intense. They also tend to lag behind in tactual investigation, and therefore frequently will have difficulties in sensory-motor development. It is important that the child's sensitivity lie somewhere between these two extremes in order for sensory exploration to be a pleasurable and meaningful experience.

Suggestions for Enriching Tactile Experience--Activities in this area should provide a variety of contact experiences which will lead toward purposeful exploration without the need for a high degree of manipulative accuracy. The materials used can be varied in terms of texture, resistance to movement, and temperature, as well as degree of manipulative skill necessary. To overcome a child's resistance to exploration and experimentation, one might hope to divert his attention from contact by getting him interested visually in small boats, squeeze toys, plastic cups, bottles or other familiar objects to be played with in a basin of water. Because water is quite non-resistant, the child need only to poke objects or pat the water to produce some effect. A bubble agent could be added to the water and thus, the child could produce or destroy bubbles, which further encourages contact. He then could be asked to retrieve colored stones, shells, or other objects from the bottom of the basin. As an additional means of increasing tactile awareness, the temperature of the water can be varied. As the child finds waterplay an increasingly pleasureable experience, one could introduce ice cubes into lukewarm water, and have the child reach for these. This is a particularly good example of an activity at the introductory level which encourages tactile exploration with a minimum of visual cues. The next step in removing visual cues and increasing tactile exploration is to have the child reach into a basin of ice cubes, held over his head, and fish out one at a time. All these activities, but this one especially, should be conducted on a voluntary basis, as not being able to see what he is touching can be very frightening to certain children.

The next stage of tactile exploration might be to increase the resistance of the material presented. One could give the child a container of sand in which are buried small trucks, marbles, etc. and ask him to find these objects with his fingers. Emphasis at this point is not on identification of objects, but on the tactile discrimination between sand and objects without visual cues. Next a sequence of slightly more resistive materials such as mud, soft dough and then clay may be introduced for manipulation. Here the child is encouraged to push, pull, roll, squeeze and poke the material. Emphasis is not upon producing some specific finished product, but on experimental manipulation.

2. Kinesthesia

Kinesthesia is the awareness of movement of the body and particularly of the position and direction of the extremities. This awareness is made possible through an internal mechanism that registers the direction and degree of muscle and ligament movement over joints. Thus, the child knows when his arm is up or down, bent or extended, by feeling these positional changes, without any visual clues. It is this internal process of feeling motor movements in combination with visual feedback that allows a child to monitor or refine motor patterns. In other words, as the child purposefully reaches for an object, he not only can check visually as to whether he is reaching in the right direction, but also can match this visual message with the sensory awareness of the movement he is making--thus establishing and refining coordinate eye-hand skill. This is important in being able to reach in correct directional patterns, position the hand for fine manipulation, and grasp and handle objects according to their weight. Kinesthetic awareness helps not only in gross movement and primary directional orientation but apparently has much to do with the speed and accuracy that a child must attain in fine motor skills. When there is inaccuracy or error in fine motor movement, such as falling short of a mark or loosing grasp momentarily, it is kinesthetic awareness along with visual attention which allows for rapid adjustment and thus, successful completion of the act. As with all development, kinesthetic awareness proceeds from gross to refined. A child first becomes aware of extreme and sudden needs for adjustment, then he is able to detect more sensitive clues and thus becomes able to produce smooth, continuous motor movements.

Suggestions for Enrichment of Kinesthetic Awareness--To help the child become more acutely aware of kinesthetic sensation, especially the awareness of position and movement of his arms and hands, one may first apply resistance to his movements to magnify or draw his attention to movement. Have the child push a heavy object (such as a two pound sandbag) across the table as far as he can with two hands and then pull it back. The teacher should discuss the effort required to push and pull. Repeat the same procedure with a lighter object, discussing the difference in strength required as compared with the first object. Help the child become aware that although he is moving his arms in the same direction, more effort is required to move the heavy object. Next he should push and pull a light object with one hand and a heavy object with the other simultaneously, in the same fashion. Again, the difference in effort required to move each should be discussed. Another activity, emphasizing the same principle, would be to have the child simultaneously lift pails of identical size but different weights. A further elaboration of both these activities would be to have the child push or pick up these objects in reciprocal or alternating pattern. Both objects should be moving at the same speed, at the same time, but in opposite directions. This activity requires the child to accommodate his movements, by being aware of the effort required, to the difference in weight. This should enhance his awareness of movement and his ability to shift quickly and adjust movements as necessary. As awareness of movements is established, one may next focus on the direction and position attained by moving the arm. Have the child stand with his eyes closed, arms at his sides. Place one extremity in a certain position, i.e., extended over his head, out to the side, forward, back, or with elbow flexed, forearm up, down, etc. Tell the child to hold his arm in that position when you let go, and to place his other arm in a similar position keeping his eyes closed. Then have him open his eyes to check whether the arms are in exactly the same position. If they are not, have him correct his error with his eyes open. Then repeat attempt at matching with eyes closed.

3. Body Concept

As the child develops and refines his ability to localize and discriminate general stimulation of his body and awareness of movements of his body parts, he develops what we refer to as body concept. He becomes aware of the individual parts of his body such as legs, fingers, head, nose, etc., on a sensory as well as visual basis. He first discriminates his body parts as individual "things" and then begins to see their relationship to other parts of his body. For example, the very young child suddenly becomes acutely aware of his fingers as he waves them in front of his face, sucks them, or manipulates a toy. Later he begins to realize the relationship of his hand to his whole arm (as an extension of his arm) and that the two combine to make an effective unit for manipulation. This realization can also be noted in trunk control and sitting balance and the child's purposeful efforts to shift his body in order to reach in a specific direction to one side or even behind him. Thus, the child who derives pleasure from tactile exploration and who receives sensory feedback from his motor movements develops increased awareness and control of his body parts.

Suggestions for Developing Body Concept--The child can readily be made aware of his individual body parts by touching these on himself. This can be incorporated into singing games, "I Touch My Nose", etc., but can be emphasized sensorily by applying various powders, handcreams, and spray perfumes to his knee, elbow, nose, finger, and so on. At first, the body part is pointed out and labelled for him, and he is to apply the material to it. It should be indicated whether he has two of these parts or only one. Next, he should be asked to find the parts from verbal command and, finally, he can be asked to name these himself while he applys the lotion, etc. Thus, awareness is developed not only through visual localization but is reinforced by the tactual stimulation of rubbing. The important factor is that he rub his own part rather than have the agent applied by someone else, for thus, he stimulates his own skin and receives feedback from tactile endings in his hand as well as from the skin over the part being rubbed. Next, he must become cognizant of the relationship of these parts. This can be achieved by developing increased control of different body parts, first separately, then in combination with other parts, i.e., wiggle one finger, tap your knee with one finger, wiggle all your fingers above your head, etc. The use of a large mirror is often helpful in developing total body concept, as he can see as well as feel the different movements he makes. The teacher also could have the child lie down on a large piece of brown paper while she traced around his body. Have him draw in his different parts. This will give him a copy of himself and thus, he can see all the separate parts and that they are connected.

4. Stereognosis

Stereognosis is the identification of forms through tactile manipulation of these, vision being occluded. Initially, the child begins to develop stereognostic ability in conjunction with visual recognition. Through increased manipulation of objects, he enhances not only his ability to visually discriminate objects but also his ability to recognize them by the tactile sense alone. Eventually he will be able to deduce something about an objects weight, softness or hardness, roughness or smoothness, through visual observation alone; or visa versa, by simply feeling the object, he will be able to recall a visual image of the form. It is this integration of the senses rather than the development of one exclusively that we are primarily concerned about, as they all are part of a basis for later development in transferring visual stimuli into motor patterns, i.e., seeing a circle and then drawing it.

Suggestions for Enhancing Stereognostic Ability--As mentioned previously, information concerning the world is developed initially through the combination and coordination of cues received visually and tactually (as well as auditorally). Generally, an object can be identified visually before it can be identified by the tactile sense alone. Thus, when trying to enhance this latter means of obtaining information in isolation, one should be sure to use only those objects the child is familiar with visually and those he can name. In establishing recognition of form tactually, one should proceed from three dimensional to two dimensional objects to geometric shapes. As specific forms are identified tactually, size variations may be introduced. Textural properties of hard, soft, rough and smooth should be included last.

Of primary importance when introducing these is that each element be presented in isolation. For example, do not ask the child to identify the object which is soft by having him feel a big round soft ball and a little round hard ball for he may get confused as to which is the element of softness. Verbal identification of textures is probably the last concept obtained, but the child should be able to make comparisons (same/different) between two objects, one in each hand, and indicate which one is soft, rough, etc., when the teacher uses the labels. Some pretraining on the meaning of same and different may be necessary to do this. In regard to the tactile discrimination of geometric shapes, these should not be attempted until the child can visually discriminate between shapes. Have him match a heavy cardboard or plastic shape placed in his hand to one of several pieces placed in front of him. Then he can be given two shapes, one in each hand, and asked if they are the same or different. Finally, he can be asked to name those placed in his hand.

The following procedures may prove helpful in developing the child's ability to integrate tactile with visual and auditory cues. First to eliminate the need for language; have the child match what he feels tactually with the visual stimuli. Place a single object in a bag or behind a screen and ask the child to feel the object. Then have him point to one of three objects which matches the one he is holding. The next stage is to place a variety of objects in the bag and ask the child to find a specific one from verbal command or visual stimulus. This step is more difficult as he must make a tactual discrimination between two or more objects; whereas before, he had to choose the correct visual stimulus to match one tactile stimulus. Next he can be asked to find two objects which are the same by feeling in two different bags, thus matching tactile to tactile.

This establishment of a match between tactile-kinesthetic and visual recognition lays a foundation for future integrative processes such as the translation of visual symbols into a motor pattern, as is necessary in copying or writing.

II. BASIC VISUAL-MOTOR ACTIVITY
OR
EYE-HAND COORDINATION

The second level within our framework is that of the development of basic visual-motor skills. Here there is a purposeful integration of visual-motor (eye-hand coordination) and sensory functions toward the development of skilled performance. We will divide this area into two aspects: a) Motor Planning, and b) Motor Accuracy. It is our feeling that the ability to plan motor movements is actually of greater importance than the more often stressed aspect of accuracy of movement. Accuracy of incorrectly planned movements if of limited value. However, it must be remembered that these aspects develop concomittantly and that it is the successful interplay between the two that provide the foundation for advanced visual-perceptual-motor activity.

A. MOTOR PLANNING

Until a motor activity becomes a skilled pattern, there is a period when a child must consciously plan required movements. This motor planning involves recalling the movements and sequence necessary for any specific action. Once the child has the correct movements and sequence in mind, smoothness and efficiency evolve through visual and kinesthetic feedback. For instance, the child who is learning to tie his shoes must concentrate and memorize the pattern and sequence of movements to be executed with each hand. He uses visual attention to check his performance as well as the tactual and kinesthetic awareness to monitor tension and control of the lace. Once this becomes a learned skill, conscious motor planning is no longer required. The task soon can be accomplished easily without even looking, the tactual and kinesthetic feedback alone becoming sufficient.

The major factors related to efficiency in motor planning include directional concepts, imitative, and self-initiated movement patterns.

1. Directional Concepts

Developing concepts and motor control of position orientations such as up, down, front, back, side, over, under, in and out, are basic to motor planning. The child can both feel and observe his body movements. Thus, he learns these concepts first in relation to his own body and its movements. Then he becomes aware of the movements of his body in relation to the environment (space), and, finally, he can perceive the relationship of objects to each other. The child learns to control placement of his arms in front, to the side, in back, or above in his attempts to shift position or reach a specific object. As the child achieves accuracy in reaching for or placing objects in different positions in relation to his own body, he then begins to observe and to execute directional or positional movements of objects in relationship to each other. He begins by taking objects in or out of containers and placing blocks one on top, beside, or in back of another. The sequence of development proceeds from isolated movements, such as that produced in direct placement of an object, to a combination or pattern of movements, such as are required in assembling more complex construction toys, buttoning, or tying shoelaces. At this point, he need not have established concepts of left and right; but he must be aware that he has two sides of his body, for it is this awareness that is the basis for later development of directional concepts of left and right. In addition to being aware of the two sides, the ability to cross over the midline of his body should also be established. For example, when picking up objects scattered on a table, a child should be able to hold a container in one hand and pick up all the other pieces on either side of him with the other hand. This successful crossing of the midline can also be noted when a child draws a line across a piece of paper which is placed directly in front of him without switching the crayon to the other hand at the midpoint.

He must not only comprehend basic directional movements, but realize that these have to occur in a correct sequence in order to complete any one motor activity. An example of planning separate motor patterns and then arranging them in the proper sequence is seen when the young child is learning to drink from a cup independently. At first he learns to drink from a cup which is held for him. Next, he learns to hold the cup and bring it to his mouth. Then, he learns to control how far he must tilt a full or partially full cup. Next, he learns to pick up the cup independently and, finally, he learns to return it to the table without spilling. Thus, he has learned to combine separate motor planning units into one continous and sequential operation. This process is established by an interweaving of both imitative and self-initiated movement.

2. Imitation of Motor Patterns

Through experimentation, the child produces movement. Those movements which are efficient are stored for future use in specific acts. Those movements which do not help him attain his goal are corrected or adjusted through visual and tactile-kinesthetic feedback, and once successful, are memorized so that they may be recalled as necessary. Imitation is not only associated with attempts to repeat one's own random movements but is often an attempt to copy another person's movements. It is through such trial and error, accompanied by a meaningful correcting process, that the child begins to attain command of his movements and, hence, develop efficient motor planning ability. This trial and error process is noted in the young child's spontaneous manipulation of objects, attempts at simple construction toys, dressing, drawing, and writing (scribbling). The purposeful imitation of patterns is noted when the child attempts to copy gestures (clapping hands or waving bye-bye) or daily activities (washing dishes, cooking or mowing the lawn) of his siblings or parents.

3. Initiation of Motor Patterns

As imitated patterns become well established, the child develops a repetoire of motor patterns which he can recall and initiate at will. Once he can initiate these at will or on command, he can begin to elaborate and combine them to handle a variety of new situations. He learns to use these motor patterns in appropriate situations or at appropriate times in relation to external visual or verbal cues. For example, as soon as he hears or sees his mother preparing supper, he grabs his bib and quickly climbs into his high chair; when he sees his father getting the keys to the car, he may run to get his jacket, etc.

Suggestions for Enhancing Motor Planning Ability--When a child demonstrates difficulty in planning motor movements, one must start on a level at which he will have some success--that is, one must return to an activity with which the child is quite familiar and which is meaningful to him. The child must be aware of the goal. For example, if the goal is to have his jacket on, one first would ask him to imitate the teacher going through the movement, while she gives verbal reinforcement. Then, when it is obvious at what point he has difficulty, the teacher can assist him through these portions of the motor movement with simultaneous verbal and visual cues.

One might start with the use of a modified version of Simple Simon. First, the child need only imitate the teacher's arm movements in the basic directional orientations. If the child has difficulty at this level, the teacher can move the child's arm for him so that he can feel the correct motor patterns. When he can imitate simple patterns, he can be asked to do these from verbal command. Then the teacher can increase the complexity of the patterns using one hand or two, first in parallel and then opposing movements and including crossing the midline. Another activity that might be useful is acting out routine activities such as brushing teeth, combing hair, etc., following the same sequence of imitation and then initiation on verbal command. Be sure to begin with activities that involve single units of movement or simple combinations of these. Then one can progress to more complicated sequences of motor patterning such as dressing, pretending to iron clothes, etc. Once the specific factors in motor planning (directional concepts, imitation and initiation) become established, accuracy of eye-hand coordination can be more easily attained through practice.

B. MOTOR ACCURACY

Accuracy of eye-hand coordination can be viewed in several stages. Each of these is based on the eyes leading and directing the hand in motor activity.

1. Unilateral

One aspect involves the development of unilateral hand use--that is, the child's ability to use either hand alone as is appropriate for a given task. Basic patterns of reach, grasp, release and control of individual finger movements should be established in each hand before one attempts to improve intricate bilateral hand skills or to develop efficient use of one hand as the lead hand. The degree of accuracy expected prior to kindergarten completion should be sufficient enough to allow the child to build ten block towers of one inch blocks, to pick up and adjust and place one-eighth inch pegs in the peg board (without using the other hand), to unscrew nuts from bolts in toy workbenches, or to toss a beanbag into a pail approximately 4 feet away.

2. Bilateral

Once the child is able to control each hand sufficiently to accomplish the aforementioned patterns, he is able to initiate bilateral hand skills--that is, skills in which two hands are used together for a single activity in either parallel or opposing or alternating movements. Activities involving parallel movements include throwing a ball with two hands, carrying an object with both hands from one place to another, using a rolling pin on clay, etc. Activities involving opposing movements include unscrewing nesting kegs (where each hand must turn in the opposite direction), stringing beads (in which one hand holds the beads and the other directs the thread), or such activities as hammering a nail or cutting a piece of paper with scissors in which one hand must maintain the position of a material while the other hand acts upon it. Alternating movements are seen in beating a drum or table surface with two hands alternately.

3. Hand Preference

As individual hand skills become more refined and bilateral use of the hands develops, the child progresses toward finer, more precise movements. As more complex activities requiring greater dexterity and a higher degree of motor planning become necessary it is more efficient to learn these intricate patterns with one hand rather than both. This lead hand can then develop relatively greater skill for finer manipulation, while the other hand assumes an assistive role. Such a need for a lead hand is evident in such gross activities as feeding and later in the development of coloring, drawing and writing, or in the manipulation of other tools such as scissors.

There is still much controversy as to what determines hand preference, when it is established, and its relationship to perceptual-motor function. It appears that even within the normal population some children seem to have an innate and strong drive to prefer either the left or right hand and that, barring physical impairment, they automatically, and very early, establish a preference for one hand and resist any attempts to change this. There is another group who do not demonstrate an early or strong preference but who are easily influenced by the environment and thus adapt to a right-handed world. A third group, for some reason, do not establish an early hand preference spontaneously nor are they easily influenced by their environment. Consequently, they continue to experiment with both hands without evolving a preferred hand. It is apparent, however, that the child does need to establish a preferred hand in order to refine manual skills necessary for writing and other specialized pattern movements.

Suggestions for Improving the Accuracy of Motor Skill--Developing efficiency of each hand separately should be considered first. One should begin with activities which require direct placement at close range, such as building block towers with increasingly smaller sized blocks until the child is able to build a tower with one inch blocks, or placing pegs in a peg board, gradually decreasing the size until success is achieved with 1/8 inch pegs. Then accuracy of placement can be increased by having the child touch a target suspended in space, such as tapping a balloon suspended from a string or poking bubbles blown from a wand. The next step would be to have the child toss a beanbag or a ball into a pail or at some other target that could be moved farther away as accuracy improves. Another aspect to be included in unilateral skills is the development of strength and accuracy of fine finger movement. This can be accomplished through the use of finger painting, squeezing and pinching and pounding clay, pasting, and a variety of finger play games.

In developing accuracy for bilateral activities, one must start with those which require parallel movements of both arms for direct placement at close range. Then activities which require one hand to hold material while the other does the manipulation, such as holding a board for pegs or holding the paper for coloring, should be attempted. A higher level of accuracy in bilateral activity can be attempted by using activities which require more refined manipulation of both hands, such as stringing beads or macaroni, unscrewing barrel kegs, tinker toys, and sewing cards. The highest level of bilateral manipulation requires that one hand develop an even finer degree of skill, while the other hand remains assistive. Such activities include hammering nails, using a screwdriver or coloring a complex picture.

It is often difficult to discriminate between the motor planning and accuracy aspects of an activity. The following example may help. The child who has not developed accuracy knows what he wants to do and executes his movements in the right direction and sequence but constantly overshoots the mark, being unable to place the peg directly into a hole or hit the nail directly on the head. The child who has difficulty with motor planning does not seem to know how to go about making motor movements to accomplish the activity: for example, the child who cannot wind a string on a spool because he either does not maintain enough tension in the string as he wraps it around the spool or does not see the relationship of movements required between the two hands.

A child who is having difficulty buttoning his jacket may be having difficulty with the motor accuracy involved in manipulating the button through the hole, or difficulty in planning his approach including the motor sequence of grasping the button, placing it through the hole correctly aligned from the inside out, and retrieving it on the other side. By breaking down the activity, one can work on individual components before combining them into a final act. One may work on the fine pincher movements required to hold the button by having the child practice picking up pennies or poker chips or by pinching clay. The child can then develop the concept of aligning the button to go through the hole more easily by practicing putting the poker chips or buttons through a slot in a large container. The child must learn to align the edge of the chip to correspond with the slot in the container. When he has understood and can execute both the visual-motor match and the motor control necessary to carry out this activity, one can go back to the sequence of buttoning with more efficient learning of that specific task being possible.

Another skill which is helpful to break down into component parts is cutting with scissors. One must first learn the mechanical manipulation of scisso and then the coordination to cut paper on a line. The child who is having difficulty with the scissors, themselves, could practice opening and closing a spring clothespin to insure that he has the pincher movements established. The clothespin should be hung upside down as it were from a heavy clothesline, thereby simulating the position and movements required in opening and closing scissor blades (with the blades pointing toward the ceiling). This involves some degree of accuracy of eye-hand coordination but is essentially stimulating the motor planning of how to manipulate scissors. Once the child begins to cut paper, the emphasis is on eye-hand coordination. At first, the child can merely be encouraged to cut anywhere on the paper to get the feel of the stroke and the resistance of the paper and the adjustment of the paper to the scissors as cutting proceeds. Later, the child should be asked to cut straight lines, and then those which involve a corner connecting two straight lines, and so on progressively increasing the complexity of directional changes as eye-hand coordination improves.

Up to this point in the chapter, we have talked about the isolated skills of visual attention and discrimination, tactile-knesthetic attention and discrimination, motor planning, and motor accuracy. These basic sensory and visual-motor skills combine and interweave in the development of more advanced visual-perceptual/perceptual-motor skills.

III. ADVANCED VISUAL-PERCEPTUAL-MOTOR FUNCTIONING

Advanced functioning denotes more integrated levels of visual-motor activity. Performance on such a level of integration is prerequisite to success in first grade. These functions will be described only briefly, at this point, as they will be discussed in greater detail, including specific methods of remediation, in the next chapter.

A. ADVANCED VISUAL-PERCEPTUAL TASKS

The visual-perceptual skills outlined in this section require efficient integration of all the basic visual attention and discrimination skills discussed thus far, and, in turn, will then be utilized as a basis for the visual-perceptual-motor skills to be discussed in the next section.

1. Organization of Forms in Space

This ability involves seeing the relationship between forms within a specific space. Forms may be arranged and varied in terms of area, quantity, direction, or position. The arrangement is affected both by the relationship of the parts to each other and by the relationship of the parts to the whole space. Examples of a child's ability to organize forms in space can be noted in his attempts to determine how many blocks might fit into a container, or how many two dimensional forms might be placed on a page without overlapping each other or going off the paper.

2. Visual Memory

This involves the ability to recall visual stimuli in terms of form, detail, position, etc., both on a short and long term basis. Development of visual memory is an on-going process in that the length of time something can be retained and the amount retained must increase in order to make more detailed visual discriminations. Memory must eventually be efficient enough to enable the child to maintain an accurate visual image of a pattern in order to reproduce it or to associate its verbal label. While we are concerned with increasing both the length of time and the wealth of material that one might be able to remember, we must also be concerned with developing some organizational plan to allow for the material that is memorized to be retrieved efficiently and economically. This makes it possible for information to be integrated with other pieces of information with which one is dealing.

3. Sequencing

This concerns the ordering of visual patterns in time and space. As one's use of spatial organization becomes more advanced and visual memory becomes more efficient, further elaborations can be achieved by sequential ordering. Temporal sequence involves concepts of first, second, third, and the concept that something occurs before or after something else. Spatial sequencing is a method of organizing according to a set pattern, such as top to bottom, side to side, left to right. One builds a block tower from bottom to top, but one might write a list of words from top to bottom on a piece of paper. At times, it is important that a certain sequence be followed in order to achieve the finished product, such as in spelling words or dividing numbers. Other times it is not particularly important but perhaps may be more motorically efficient to follow some predetermined sequence, i.e., when drawing a single symbolic design.

The development of skills in organizing, remembering, and integrating information can be observed early in life as a child learns to identify and recall objects familiar to him or to empty and fill containers, build blocks, or assemble nesting cups. With nesting cups, he also becomes aware of the sequencing element. At first, this play is largely trial and error experimentation, but as the discrimination of form and memory increases and the methods of organizing material becomes more familiar, behavior becomes less and less trial and error and more and more purposeful. The child learns the sequence of visual cues and motor movements necessary to put the nesting cups one inside the other without any left over.

B. ADVANCED VISUAL-PERCEPTUAL-MOTOR TASKS

The area first demands fine motor skill and planning with a tool, such as a pencil or paint brush, but initailly the crayon. In use of a crayon, it is the form in space which directs the motor movements. Form will limit the extent of movement and dictate the direction of such movements. In coloring, the child will first simply learn to confine his movements to the paper, rather than the wall or table. Soon he begins to recognize that the outlined form is the area in which he must operate and that his tool can reproduce marks that mirror his movements. The process of organizing or producing a visual-motor match begins when he attempts to localize the crayon marks within the form. As the space becomes more confined, movements must become more refined, and he soon becomes aware that it is more efficient to match the direction of his strokes to the type of form he wishes to color--for example, horizontal strokes for wide areas and vertical strokes for tall areas, etc.

As skill becomes more refined, he may begin to attempt simple pencil mazes and then to trace on line drawings. At this point, it is necessary for the motor movements to follow the given visual form exactly. Next, the child can attempt to copy line designs. Finally, he develops the ability to recall the form and the motor movements required to produce a visual stimulus he has seen previously. First, he should be able to draw vertical lines, then horizontal, and on to the basic geometric forms: circle, cross, square, diagonal lines, and finally combinations of these to form more complex designs. One can observe the child's development in this area as he spontaneously begins to try to reproduce or copy the first forms he recognizes, i.e., straight lines and circles. We further see that efficiency and accuracy in this skill closely relates to the development of visual discrimination and memory of forms. Initially, the child only makes a scribble. As he begins to recognize letter forms and to develop the specific motor patterns necessary, his productions correlate more and more closely with the actual visual stimuli.

Once the child achieves a certain degree of accuracy in reproduction, he must learn to vary his reproductions in terms of: size (making the same form large or small), spatial aspects or placement (being able to draw designs at the top, bottom, middle or side of a paper), and sequence (being able to place forms in a specific order). If a child can control all these variables, he should be able to write letters (upper or lower case) in the correct sequence to form words (and finally sentences) in the proper place and direction on the paper. While activity at this stage remains mainly a copying activity, the child does begin to rely on visual memory of form and the sequence of motor reproduction required to make these.

Finally, the child must learn not only to translate visual stimuli into motor patterns but also to add auditory stimuli into this sensory-motor process. He must learn to draw from verbal command a circle, etc., or some specific letter form. Then he must reproduce complex forms including elements of size, position, and sequence from dictation. At this point, all the basic elements of visual-perceptual-motor skills required for writing activity will have been established and integrated.

This chapter has provided an overall framework of looking at Visual-Perceptual-Motor functioning. It is our hope that the teacher will become acutely aware of individual sensory awareness and discrimination and eye-hand coordination components as well as the combination of these into integrated visual-perceptual-motor functioning when preparing children for the first grade. As was stated previously, development within this framework occurs both simultaneously and progressively. By isolating the component parts, it is hoped that one can observe a child's functioning at any stage of development, assess the various components of this development, and thus obtain a point from which remediation or further stimulation can be begun. It is hoped that this plan gives the teacher a rationale for working out and establishing a learning experience for the child, rather than simply having him repeat or practice a specific activity until he can achieve it. This task analysis approach should be more beneficial as well as more meaningful for both the child and the teacher.

Chapter Two

ASSESSMENT & TRAINING OF VISUAL-PERCEPTUAL-MOTOR FUNCTIONING

This chapter is presented with two purposes in mind. The first is diagnostic. We feel that the activities presented and functional skill levels discussed should be accomplished by a child before he begins first grade academic work. If the child does not possess these skills, the teacher can discover this by using the observational material in this chapter. The second purpose is to help the teacher develop a curriculum to enhance learning skills. To do this, she must have a clear idea of the basic processes and sequences involved in visual-perceptual-motor function.

The previous chapter presented a three-part framework to describe the components of visual-perceptual-motor function and their development. In this chapter we have selected the higher aspects of visual-perceptual-motor function (Part II--Eye-Hand Coordination and Part III--Advanced Visual-Perceptual-Motor Function) and presented them within a model to be used for curriculum planning. This model describes the areas of visual-perceptual-motor function by first separating the visual-perceptual and eye-hand coordination elements (visual and motor) and presenting some of their individual developmental aspects and then integrating these two areas in combined visual-perceptual-motor tasks.

Within the three major areas, the model also breaks tasks down into three levels of complexity depending on the amount of organization provided by the teacher. The highest level (Level I) includes activities which require the child to organize himself and integrate skill components to achieve a given goal in relatively unstructured situations. On the second level (Level II), a more specific goal is provided; the child again must develop the means of achieving this but some structure is provided. On the third level (Level III), a more highly structured approach is utilized to help the child develop the basic skills necessary to function on Levels II and I.

The reason we have developed this model with the visual-perceptual and visual-motor (eye-hand coordination) areas separated first and then recombined in a visual-perceptual-motor section is that we feel one must focus both on the component parts of a task and on the process of integrating them into complex skills. All too often, current tests available for evaluating visual-perceptual-motor function give tasks which combine several skills at one time. Some do so without indicating the separate elements involved; others separate elements but do not suggest how to refine the skills or integrate it with other areas.

MODEL FOR ASSESSMENT & TRAINING OF VISUAL-PERCEPTUAL-MOTOR SKILLS

	Level I Unstructured	Level II Moderately Structured	Level III Highly Structured
Visual Perception			
A. Organization of Forms in space	Arrangement of precut shapes on paper as child desires	Arrangement of precut shapes on paper to match the sample	1) Match positional orientations of 3D objects 2) copy placement of 3D object
B. Visual Memory of Form	Remember details of storybook picture	Remember nine specific pictures (include 3 categories, 3 rows, 3 columns)	Indicate which one of three 3D objects has been removed
C. Sequencing of Visual Material	Match sets of 3 - 4 sequential designs	Copy sequence of forms	Copy sequenced 3D objects
Eye-Hand Coordination			
A. Increasing Motor Efficiency	Use of preferred hand for refined, repetitive movements; assistive use of other hand, i.e., hammering	Use of lead and assisting hands for less skilled activities, i.e., bead stringing	1) fine finger dexterity prehand small objects 2) eye-hand coordination, direct placement
B. Awareness & Integration of Two Sides of the Body	Singing-action games	Modified Simon Says for crossing midline	Modified Simon Says no crossing, in parallel, opposing & alternating patterns

MODEL FOR ASSESSMENT & TRAINING OF VISUAL-PERCEPTUAL-MOTOR SKILLS

(Continued)

Combined Visual-Perceptual Motor Tasks	Level I Unstructured	Level II Moderately Structured	Level III Highly Structured
A. Fine Motor Planning with Tool	Color in figure of child with adapted strokes & segmental awareness	Copy sample coloring to become aware of segments	Match direction of strokes to shape
B. Translation of Visual Form into Motor Pattern	Copy line designs	Imitate motor movements of designs	Trace or use stencils of designs
C. Elaboration of Design	Copy shapes of varied size in correct sequence and position on paper	Copy sequence	Copy size

AREA I: Visual Perception.

One assumes within this model that visual acuity and ability to match basic shape, size, and color are intact. As described in Part III of Chapter One, this area is concerned with three elements in the visual-perceptual processing system which appear to be essential in the overall development of efficient visual-perceptual-motor skills: 1) organization of forms in space; 2) memory of visual form; and 3) sequence visual material. Growth in skill in these elements occurs simultaneously; thus, one cannot give priority to any one. They have been isolated only in an effort to better focus attention on some of the dynamics involved in visual-perception.

AREA II: Eye-Hand Coordination.

One assumes, once again, that there are no specific neuro-motor problems present and that basic hand patterns of reach, grasp, release, transfer, and prehension are established. This area is concerned with two major aspects of motor control: 1) developing hand skills and establishing a preferred hand to increase refinement of manipulative ability; 2) developing awareness and integration of two sides of the body through experiences in parallel, opposing, and alternating hand patterns. Again, development in these two aspects occurs simultaneously and undergoes continuous and ongoing refinement.

AREA III: Combined Visual-Perceptual-Motor Tasks.

There are three successive phases which seem basic to the integration of visual-perceptual and eye-hand (visual-motor) abilities in establishing pre-writing skills. The first phase involves fine motor control as typified in coloring with a pencil or crayon. At this level, motor planning and accuracy are governed by the area enclosed in the form to be colored and emphasis is placed upon the match of the motor pattern to the spatial area. The second phase involves the translation of a visual image into a motor reproduction of this form. Increased motor control and memory for motor patterns is essential. In the third phase, the child combines the elements of fine motor control, memory for patterns (shape and size), visual organization of form in space, and visual sequencing.

To obtain an over-all view of the child's performance in the visual-perceptual-motor area, the teacher should present activities on Level I from each sub-area. This should give her a profile of each child's skills as well as the over-all level of the whole class. Thus, she will be able to plan her program to emphasize the areas in which the children have difficulty. When a particular child or class has difficulty in any sub-area, the teacher can move to activities on Levels II and III of that sub-area to assess and develop the component parts of this specific skill.

Each specific activity presented should be considered as only one sample of the process. The essential principle of each activity is indicated in the model. The teacher can supply many additional activities of her own for each sub-area based on the underlying principle.

I. VISUAL PERCEPTION

A. ORGANIZATION OF FORMS IN SPACE

The emphasis here is in helping the child realize the relationship of forms within a specific spatial area. The area may vary in plane (upright as on a blackboard or flat as on a table), size, or shape. The problem is to determine how specific forms may be arranged in this spatial area, which requires an understanding of their size and number, their position, and their sequence. Arrangement is affected both by the relationship of the parts in and of themselves, to each other, and to the "whole space". The child must become aware of and then master such problems as: whether forms are too large to fit within a designated area and if small enough, how many will fit within this space. He must also learn the primary sections (top, middle, sides, etc.) of an area. He must be aware of the positional orientation of forms that have a "right-side-upness", and, as well, the correct positional relationship of separate parts of a whole. Finally, he must learn to use the space provided in an efficient manner.

A child's ability to recognize spatial orientation of forms and to manipulate these is a gradual process which develops from: awareness of his own body in space, to appreciation of objects within three dimensional space, to then finer discrimination of two dimensional space. The child first learns to move himself around furniture, through narrow passages, and under or over obstacles without mishap. Next, he learns to manipulate objects in relationship to each other via building, nesting, take-apart and construction toys and objects. Then he is ready to manipulate two dimensional pieces on a flat surface such as pasting pieces on paper or moving magnetic or flannel pieces on a board.

It is this latter aspect of two dimensional organization which we are particularly interested in establishing before first grade. There are many classroom activities that give the child experience in this area and provide the teacher with an opportunity to asses levels of competency. Let us look at this area in terms of the three levels of complexity outlined in the model.

1. Level I: Unstructured

At this level, spontaneous manipulation of the material within a broad framework is encouraged. This requires a degree of self-organization as it is necessary for the child not only to establish his own specific goal but also to organize an efficient sequence to achieve it.

Activity--Arrange and paste a specific number of pre-cut shapes on a piece of paper.

The materials are: a piece of 8" x 10" paper for each child, paste, and a specific number of presentational pre-cut forms with definite positional orientations which can be related to each other. For example, a house made up of separate parts, a strip that could be road, an animal, tree, etc.

Have the children seated at desks or tables with enough room to work unhindered. Say, "I am going to give each of you some pieces to paste on this piece of paper. You may paste them on it anyway you wish, but be sure to use all the pieces."

Observations--Observations are made on the child's approach to the task (set) during the activity and on his visual-perceptual skills. These latter observations can be made later in the day from the finished product. For ease of recording and reviewing, it is felt that only problem areas should be marked. If a child is absent, his name can be circled to indicate that he was not tested and will need to be checked at a later date. (Appendix for sample check sheet of assessment on Level II.)

a. Set or Approach:

1) Does child understand task or do directions have to be repeated several times?

2) Can child organize himself to complete this task, or does he become distracted and/or forget what he is supposed to be doing?

3) Does he make an attempt at representational organization or make some effort to organize material by shape, size, or color?

b. Visual-Perceptual Skills:

1) Does child use total space provided effectively or does he use only one area or overlap pieces off paper?

2) Are pieces appropriately organized on the paper, i.e, house on ground, rather than in the sky?

3) Are pieces appropriately related to each other, i.e., roof on top of house not under it?

Discussion--The purpose of this activity is to observe a facet of the child's perception of space and the relationship of objects in space, minimizing motor control. Thus, one can determine whether space has any meaning as a quantity to be manipulated, whether the child is aware that some forms have a predetermined sidedness or orientation so that parts may be related in different ways to produce different effects.

If a child has difficulty in obtaining and maintaining the set, the teacher should check to see whether this is the case only when visual-perceptual tasks are involved or whether such behavior is characteristic of his performance in general. Thus she may determine whether set-taking is the area in which she must concentrate or if it is visual-perceptual skills she must develop.

In scoring the product, various possibilities of finished products are possible. The child should not be penalized if he does not make a representational product. However, if he does not and the product is very abstract, activities such as the one given on Level II should be utilized in order to determine whether he can, in fact, cope with this type of spatial organizational problem when necessary.

2. Level II: Moderately Structured

Here the child is given a specific goal to accomplish but still must organize the process himself. A moderate degree of structure is provided in that he is given a sample which he must copy.

Activity--The child is shown a picture (abstract or representational) which has been assembled by the teacher from the multiple pre-cut (colored construction paper) shapes pasted on 8 x 10 manila drawing paper. He is given a duplicate set of pieces and told to paste these on his paper to match the sample.

Observations--The teacher should observe whether the child attempts to copy the model and whether he is able to complete the task. Are parts in correct relationship to each other (i.e., rightside up, overlapping, inserted)? Is the whole arrangement in correct spatial orientation on the paper (i.e., rightside vs. left, top vs. bottom, middle vs. edge)?

Discussion--Meaningful pictures (rather than abstract designs) are often easier to reproduce because familiarity with the object helps the child orient and organize the parts into a whole. If the child has difficulty at this level, one must first determine whether the problem involves the details of spatial organization or an inability to understand and follow directions and/or complete a task (set). When there is a basic problem in self-organization, (attention, understanding and follow-through), one must focus on these problems by using material or tasks already familiar enough as to be easily accomplished. The child can then concentrate solely on self-organization rather than on the visual-perceptual organization of new material as well.

When the problem appears to be essentially that of spatial disorganization, one must look further into the component parts of spatial organization. This is considered on Level III.

3. Level III: Highly Structured

Here, specific skills required for organization in space can be assessed within a highly structured situation. Two important skills are the ability to discriminate positional orientations and to locate specific spatial areas. Each skill is considered separately.

Activity--If the child has difficulty with positional aspects of form, he can be given tasks in which he is asked to match upside down, left-right, or diagonal rotations of three dimensional objects, and then cut-out pictures or felt pieces. First, he should simply be asked to point to correct matches and later to correct the item which is different from the others.

If the child has difficulty in placing material in the correct spatial area (bottom, top, side, middle), he can be asked to copy placement of three dimensional objects such as blocks on a mat or piece of paper.

Discussion--Once specific skills can be accomplished, they should be combined gradually to enable the child to work on the integration of these skills as in Levels II and I.

This basic awareness and manipulation of space is fundamental to future efficiency in reading and writing as the child must be aware of letters which are identical except for positional rotation, spacing of letters to form words, and the management of sentences on the paper.

B. VISUAL MEMORY OF FORM

The emphasis in this subarea is in helping the child develop retention and recall of visual material as he increases his discriminatory ability. Visual Memory must evolve in terms of increasing both the amount and detail of material (eventually to forms in sequence, i. e. words) retained, as well as the length of time which forms can be recalled. This short-term and eventually long term memory process is essential to higher levels of visual perception.

A child must be able to remember increasing amounts of visual detail to allow him to compare and contrast complex designs. This is a prerequisite to future ability to compare words and thus achieve success in spelling and reading. When copying material from the blackboard, efficiency in transferring visual stimuli to motor patterns depends to a great extent upon the length of visual materials one is able to retain (short term). Otherwise, time and accuracy may be sacrificed in constant re-checking. The time factor is of further importance in that there is limited value in recalling items for only a brief period. Recall must eventually be long enough to allow one to retrieve a fund of material to use in any old or new combination. When writing spontaneously, one must be able to revisualize letters and word forms to write, without any visual or auditory cues.

In order for the child to develop this short term retention and long term recall, he must evolve an organizational process to enable him to cope with a large amount of material. This organizational process will utilize elements of perception and cognition. Perceptually, he must scan the stimulus to recognize positional and sequential aspects; as the amount of length of visual material increases he must categorize this material to render it more manageable.

In order to assess the child's skill in this area the teacher can use a variety of activities within the classroom. Again these will be outlined on three levels of organizational structure provided by the teacher.

1. Level I: Unstructured

At this level the child has considerable freedom of selection, in that there are a variety of items and he must organize himself to select and sort the stimuli into a framework so that he can remember them.

Activity--Memory for details of a picture.

The materials are a fairly complex picture (from a storybook or magazine) in which there is interaction between people and animals or objects.

Have the children sit in a semi-circle in front of you. Say"I am going to show you a picture that has many things in it. I want you to look at it very carefully because when I hide it, I am going to ask you, one at a time, to tell me what you can remember. Don't tell me now; everyone keep very quiet and look very carefully at everything in the picture." These instructions may be repeated wholly or in parts till all the children understand. Do not provide any description of the picture to help the children remember the items, if this is to be used for diagnostic purposes. When all children have had a chance to view the picture carefully (about 15-20 sec.) hide it and ask the children to tell what was in the picture.

Observations--Again, observe both the child's approach to the task (set) and his visual-perceptual skills.

a. Set or Approach:

   1) Does he understand task?

   2) Does he look carefully at whole picture or only focus on one area?

   3) Can he wait until asked to tell what he remembers?

b. Visual-Perceptual Skills:

   1) How many items can he remember? (1/2 - 2/3 of major items possible is expected)

   2) Are adjectives and adverbs representing size, color and action used?

   3) Does he simply list items or does he relate objects into a simple story? (By asking, what he saw in the picture, both methods are made possible.)

Relating a story may indicate better integration, if the child uses visual stimuli present in detail and does not get carried away with ideas of his own not indicated in the picture. However, the criteria for this activity is the number of detailed visual stimuli recalled, not the expressive language skills of the child.

Discussion--If performance is very poor, the teacher should rule out a language (naming) problem, by checking whether child can name the items in the pictures without memory involved. If there is no language problem present, then she must evaluate the visual memory process. This can be accomplished by first checking to see if the child utilizes any organized means or method of recalling visual stimuli. Evidence of such organization can be seen when there is association of items into a category (by use, color, or some other common characteristic), or by the spatial location on the page (horizontal or vertical rows, top or bottom part of the page). It is important to note and encourage the child to utilize such methods, for memory is seldom enhanced merely by rote practice. We remember best that with which we have made some association. The dynamics of organization can be observed more easily on Level II where the presentation provides structure for the child to utilize.

2. Level II: Moderately Structured

Activity--The child is shown a stimulus card with nine pictures arranged in three rows of three pictures each. These pictures should be taken from categories such as food, animals, clothing, toys or transportation, etc., with three objects in each category. They should be placed with one item from each category in all rows, but not making a vertical column of any one category. The stimulus card is removed after 15-20 seconds, and the child is asked to name all the things he can remember.

Observation--The teacher should note again whether the child looks carefully at the total stimulus card, as well as how many items the child can remember. Most important, she should observe whether there is any apparent system of organization to his retention - that is, as he names the items note whether he names items by row (horizontal or vertical), by category or in random fashion. If he utilizes some method of organization, he should have a better chance of increasing his memory skills.

Discussion--If the child remembers less than four items, but there is evidence of organization in his attempt, he essentially needs more practice at this level to increase the number of items retained. If he is not able to succeed at this level after an attempt has been made to help him organize his memory processes, the teacher should drop back to Level III.

3. Level III: Highly Structured

At this point we can check the more basic elements of visual memory, i. e. recognition of form, awareness of its absence, revisualization of it, and the sequential aspects of a series of forms. First, the teacher should check to see whether the child understands the concept of something is "missing" or "has been taken away" from a series of objects. It is advisable to begin with three dimensional objects, as some children have difficulty in recognizing even familiar objects in the two dimensional pictorial form.

Activity-- The child is given three familiar objects placed in a row on the table. (Have the child name all items to be used before you begin the memory task.) Have the child hide his eyes or place a barricade between the child and the objects. Then ask the child to look and tell you which one is missing. Be sure to vary position of missing item in subsequent trials. As the child is able to remember any single item removed, remove two items of the three possibilities and then all three. Continue to increase the number of items presented and removed. Positional clues and sequential order should be emphasized as a means of organizing the memory process. When a child has named missing item(s) correctly, ask him to point to where the item had been, and begin to establish labels such as beginning, middle and end of row, etc. When retention of three dimensional objects has been established, one may use two dimensional representations of these objects, following the same progression.

One can also increase the complexity of the task by increasing the number of rows, as well as the number of items. As the number of items increases, one should introduce the importance or efficiency of categorizing the items presented as a further aide to remembering material. A higher degree of efficiency can be obtained when the child is able to utilize both the perceptual (position) and conceptual (categorization) aspects of organization, even when items are scattered within a specific area.

C. SEQUENCING OF VISUAL MATERIAL

Another aspect important in visual-perceptual development is sequencing. Here the child must recognize a spatial/directional ordering of visual stimuli. The sequence may involve both three dimensional and two dimensional aspects, i.e. material may be positioned in a vertical or horizontal sequence from left to right, in front, behind, beside or top or bottom. In all cases, there are dimensions of beginning or first, middle, and end or last denoting sequential progression. Developing an awareness of sequence gives the child a systematic means of organizing, interpreting and transmitting information. Thus, sequencing is a higher level of manipulation of forms in space.

If the child has the concept of sequencing, he then knows where to begin and end, and what must occur between the two. This, of course, is basic to reading and writing skills. Thus, the teacher must observe whether the child has basic awareness of the sequence and progression in visual materials. Eventually, he must be able to store or remember certain sequential patterns in order to use them in reading and writing.

1. Level I: Unstructured

The following activity does not leave the child as much chance to organize himself as do the prior Level I activities. However, sequencing is a more exact skill requiring considerable built in structure from the child.

Activity--Match sequencing of shapes.

The materials are a pencil or crayon for each child and a ditto sheet on which one of three or four possible sequential sets of designs are to be matched with the sample. Four or five shapes or line designs should be included in the sequence. All sets should have exactly the same elements; the sequence of these being the only variable (see appendix for sample).

Have the children seated at desks or tables with enough room to work unhindered. Say, "Look at the first set of designs, up here at the top of your paper (holding up a sample, point to first sample). There is one set of designs that is exactly the same as this one. There are two other sets which look like the first one but are not exactly the same (point to all possible sets in first row). Put a circle around the first set of designs and another circle around the one that is exactly the same as this. When you have finished go to the next row, put a circle around the first set of designs and circle the one that is exactly the same."

Observations:

a. Set or Approach:

1) Is the child able to listen and follow directions for this type of activity?

2) Is he confused by so many rows and the fact he must treat each separately?

b. Visual-Perceptual Skills:

1) Does he have basic concept of matching sequence?

2) Does he miss part of the sequence (middle or end)?

Discussion--If the child demonstrates good basic concept of sequential processing and only makes incidental errors, he simply needs more practice at this level. If on the other hand, he shows poor understanding of this task, there are two major explanations. He may think all sets are the same because all forms are present, being oblivious to the order, or he might match sets only by the first and last elements, disregarding the middle elements. Thus, one could use the second level to point out all the elements involved.

2. Level II: Moderately Structured

Activity--The teacher has a series of flashcards with forms drawn in different sequential patterns. The child is given a set of cards with individual forms drawn on each. He is to arrange his cards into the same sequential pattern as that of the teacher.

Observations-- The teacher can observe not only the finished product, but also the manner in which the child executes the sequence (proceeding from left to right or in random order).

Discussion--If the child has difficulty at this level, the teacher may point out the first, middle and last positions and that one generally starts at the left side and proceeds toward the right, in order. If the child continues to have difficulty with this task, one must consider the possibility that the dual discrimination of form and sequence is too confusing. In such a case, one may have to resort to more concrete situations such as the use of three dimensional materials, where shape is constant and sequential orientation is denoted by size or color, see Level III. If however, the child can manage this task successfully, the teacher might wish to vary the task by placing the child's cards in a random order and ask the child to correct these to match the model. This should prepare him for a return to Level I and the more rapid scanning and matching process of comparing one sample to three or four others, thereby building memory and speed as well as accuracy in sequential matching.

3. Level III: Highly Structured

Activity--Three dimensional material such as different colored or sized blocks can be used. These are presented in vertical or horizontal arrangements. One should start with three items to establish the concept of first, middle, and last. The child is to copy the arrangement item by item with the help of the teacher who emphasizes the placing procedure as well as the placement of objects (i. e. the sequence of time as well as space). She should use appropriate verbal directions to emphasize the process as she demonstrates. It would seem that the easiest pattern to copy would be an arrangement of three different sized blocks into a tower. Next, the child can be asked to copy tower patterns by color using three blocks of identical size. Next, he should be asked to copy horizontal patterns (trains), using colored blocks and progressing from left to right. When he is able to succeed at this level, i. e. copying item by item, then he should be asked to copy the pattern from the finished product.

These activities should help to establish the basic concept of sequential ordering. The process can be elaborated by increasing the number of items to be ordered and by varying the properties of the materials, i. e. using size and color simultaneously, or by using beads to string or by placing other familiar objects in a line.

II. EYE-HAND COORDINATION

This area concerns the basic motor aspects of perceptual-motor skills. These will be divided into two phases. The first phase deals with the increased motor efficiency of individual hands, and the second with the integration of two hands in more complex patterned movements.

A. INCREASING MOTOR EFFICIENCY

A certain amount of efficiency in each hand, whether it is to become the lead or assisting hand is necessary and must be achieved. Both hands must be able to grasp small objects and manipulate them (pickup, hold and place) in order to complete functional activities such as playing with simple construction toys, feeding, and dressing. The degree of skill in each hand should be fairly equally developed until the activity becomes so complex as to require either two hands (one to lead and one to hold) to complete the task, or such refined patterned movements that it is more efficient for one hand to learn and perfect that specific activity, and therefore become the preferred hand.

We are not concerned here with specific theories of hand dominance concerning which side or when dominance should be established. We are concerned, however, that a child establish a preferred hand before he enters first grade. It has been our experience that if a child has not established a hand preference by the time he is five, he also displays a delay in fine-motor coordination in general. Normally, as a child refines manipulative skills, he begins spontaneously to evolve a hand preference. Thus, it seems better to help the child refine manipulative skills in both hands and allow a natural or spontaneous preference to evolve rather than pre-selecting a hand to be the lead or dominant one and prescribing practice with it. If, as occasionally happens, the child seems unable to determine a preference for himself through the above process, then a preference must be selected for him before he enters the first grade for a continual switching of hands for pencil activities at this time, when he is learning many other new skills, will only confuse and inhibit his performance further. It would seem most logical that the right hand be selected in this case.

To assess the degree of skill established in either hand and the inclination toward a hand preference, activities will again be presented on three levels.

1. Level I: Unstructured

On the first level one should present an activity requiring refined and repetitive patterned movements of one hand and refined assistive manipulation of the other.

Activity--Hammering with Playskol nailboard.

The materials are one inch nails, hammer and masonite board for each child. (Optional, little wooden pieces, houses, trees, etc.)

Make sure the children have enough room at the table so they do not hinder each other. It is often desirable to place a mat or some such material under the boards if many children are hammering at the same time. The children may stand or sit as desired. Say, "Here is a board, hammer and nails (and some wooden pieces) for each of you." Further instructions or explanations are up to the teacher, as variations of the instructions will not effect this activity appreciably.

Observations:

a. Set or Approach:

   1) Can the child stay with the task a reasonable length of time?

   2) If he stops, is it because of behavioral or perceptual difficulties?

b. Motor:

   1) Does the child use one hand consistently for hammering?

   2) If he still switches, is one hand noticeably more efficient than the other?

   3) Does the child hold the hammer toward the end, and is the hammering movement rhythmical?

   4) Does the child have any difficulty picking up nails and positioning these on the board?

Discussion--If hand use is consistent, but accuracy or manipulative skill is poor, then the teacher should provide the same type of activity, but one which requires less accuracy, i.e. large pegs and a pounding peg bench. As skill improves, gradually reduce the size of the pegs to be hit. A variation of this activity and probably one that would be beneficial as an adjunct to hammering would be to present a set of Playskol screwdriver and screws. This will require a different type of motor manipulation and different patterned movement, but would also be illustrative of the child's control, accuracy and choice of a lead hand.

If hand preference is not strongly established, the teacher should drop back to Level II.

2. Level II: Moderately Structured

At this level two hands are used in a similar pattern of lead and assist, but the skill required allows for either hand to be the lead with a lesser degree of accuracy of both hands necessary.

Activities--These include stringing beads, popbeads, assembling tinkertoys, nuts and bolts, and the like. These activities can be graded in terms of difficulty by varying the size and complexity (popbeads vs. screwing together toys) of materials used. The child can obtain much manipulative practice and opportunity to experiment in developing a lead or preferred hand.

Observations--When presenting and observing such activities, the teacher should note when there is a tendency toward consistent use of lead and assistive hand patterns. For example, does the child use the same hand for holding the base of tinker toys and beads, and the other to insert the peg or string. She should also note when accuracy of manipulation allows for handling of small sized materials, such as one-quarter inch beads.

Discussion--If the child can manipulate materials of this size easily and one hand tends to be the lead more consistently, then he is probably ready to proceed to the higher level (Level I). If the child demonstrates poor coordination with activities on Level II, the teacher should drop back to Level III to work on development of individual hand use. It is likely that one hand may be less coordinated than the other and Level III will allow for manipulative practice with this hand.

3. Level III: Highly Structured

At this level, there are two separate aspects which are important to achieve and then combine to attain efficient eye-hand skills. One is fine finger dexterity which involves fine prehension (either thumb to index and third, or thumb to index) and the control of individual fingers to allow an object to be repositioned or manipulated in the process of placing it. The other is eye-hand coordination which involves the efficiency and accuracy with which the eye directs hand movement. Poor eye-hand coordination would be quickly apparent when over-or-undershooting the target occurs. In both these aspects, one should always work toward development of accuracy first and then toward increasing the speed at which the activity can be performed.

Observation and training can be carried out in the classroom with the utilization of several activities, each emphasizing the use of one hand at a time to develop skill with both hands separately.

Activity A - To observe individual finger control and manipulation (including prehension), one may present clay, fingerpaints, pennies to be placed in a bank, picking up small pegs or marbles to be placed in specific spots, tiles, clothespins to pinch and place around the rim of some container, or tweezers with which to pick up small objects.

Observations--While engaged in these activities the child will use many different finger movements, thus strengthening and improving skill. Activities of course, may be graded by size and degree of strength required to manipulate the object or tool. One should always begin with larger objects and/or those objects which don't require much prehensile strength. Note that some activities only require grasping and placing an object (blocks, transferring pegs from one board to another, marbles in a Chinese Checker Board) while other activities require repositioning or additional manipulating of the particular object before final placement is achieved (tiles, pegs, pokerchips in variously slanted slots). Therefore, start with the more simple and work up to the more complex.

Activity B - To observe the directness of eye-hand coordination, one may note the accuracy of alignment of small blocks in a vertical tower, directness of placement of small pegs in a board and placement of round beads on top of these pegs, accuracy of hammering in pounding bench activity, tiles in tileboard, etc.

Observations--Again, large objects should be used first. Distance from pickup to placement should be kept short at first and in one plane, horizontal to the body. This of course should be lengthened and varied as skill improves.

Discussion--Most activities require both elements of fine finger dexterity and direct eye-hand coordination. However, one should attempt to observe each aspect as separately as possible in order to isolate the particular problem that a child may be having. If he has difficulty with both fine finger manipulation and placement, one should concentrate on only one aspect at a time. Have him practice picking up large pegs, simply dropping them into a container rather than placing them into individual holes; or have him practice placing material which he does not have to reposition first.

When each hand can perform these types of activities smoothly and rapidly with equal skill, one may move back to Level II where both hands are required to carry out the activity but neither needs to be more skilled than the other.

B. AWARENESS AND INTEGRATION OF TWO SIDES OF THE BODY

At the same time as the child is refining individual hand use, he must also learn to control the two sides of his body in parallel and opposing and alternating movements, including crossing the midline of his body. This development generally occurs spontaneously, the child being unaware of specific patterns as he participates in the typical childhood games which range from active gross motor skills (hopping, skipping, jumping-jacks and jumping rope) to fine motor skills (Handsies-Clapsies: a sequential hand ball game, jacks and cats-cradle). What must evolve is the ability to isolate, choose and combine specific patterns, as appropriate, to carry out the smooth and controlled movements of skilled performance.

To assess these developmental aspects of arm movement, one can again look at this on three levels.

1. Level I: Unstructured

This level requires the highest degree of integration. The child should be able to control all types of movement in various sequential patterns, shifting to a different sequence as necessary. Probably this can most easily be observed through simple singing-action games (finger plays) which involve arm and finger movements, such as This Old

Man, Peas-Porridge Hot, Ten Little Indians, I am a Funny Little Dutch Boy, Mockingbird (Papa's gonna buy you a diamond ring....), etc.

Activity--Any singing-action game.

No materials necessary.

Have the children seated in a semi-circle around the teacher. Proceed as you would when teaching such songs or finger-plays.

Observations:

a. Set or Approach:

1) Can the child integrate motor movements with the words of the song?

2) Can the child follow a motor sequence correctly?

b. Motor:

1) Can the child perform motor patterns only involving parallel movement?

2) Does the child have difficulty in crossing over the midline of his body?

Discussion--Most children will have minimal difficulty with these activities. Some, however, will be able to perform specific movement patterns but will have difficulty in terms of speed or in combining or shifting from one pattern to another. These children essentially need more practice at this level to build up speed and/or the ability to carry out the transition smoothly. For those children who become disorganized and unable to carry out these patterns adequately, go back to Levels II and III to ascertain the nature of their problems.

2. Level II: Moderately Structured

At this level, we are concerned with assessing the child's ability to cross the midline of his body when such movements are more efficient in carrying out motor activity. Difficulty may be evident when the child either: (1) isolates the use of each arm to that side of his body, thus, when it becomes necessary to move an object across the midline he transfers the object form one hand to the other in continuing the path or (2) makes exclusive use of one hand and when it becomes necessary to cross the midline he uses his arm and whole body in parallel movement (instead of moving his only arm across his body).

Activity--Present such tasks as having the child draw a line on the blackboard between two targets approximately three feet apart. The first target should be placed to the left of the child and the second to his right. The child is to stand at a point in the center of these. The targets should be approximately at nose height. The child is requested to draw a line with one hand. He may choose which one he wishes to use; however, he should be able to do this with either hand.

To determine whether the child can cross the midline with both hands simultaneously the teacher could play a modified game of "Follow the Leader" using the arms. The teacher should perform patterned arm movements which require crossing the midline (both hands to opposite knee or shoulders, etc.) alternating with movements which do not require crossing from one side to the other.

Observation--The child may demonstrate difficulty in crossing with one or with both hands simultaneously.

Discussion--If the child has difficulty only in those activities that require crossing with both hands simultaneously, then it can be assumed that he is able to cross the midline but has difficulty in integrating the two sides together. Thus, practice in doing such will be necessary. This can be accomplished on Level III. If he has difficulty in all patterns which require crossing, one still should refer to Level III to assess awareness and control of individual sides. If his skills are adequate at this level, one will still have to spend time on development of crossing the midline. This can be done by utilizing activities which require the child to keep his hand on an object such as a car which is to be moved along a long road (drawn on paper) which crosses his body, or activities which keep one hand occupied, such as in holding a container while the other picks up small objects placed randomly on either side of his body.

3. Level III: Highly Structured

Here we are concerned with the child's ability to execute and control arm movements in simple patterns which do not require crossing the midline, but do require the control of both sides together, first in parallel and then in oppositional movements.

Activities--Observation and training can be carried out by using the same modified game of "Follow the Leader" mentioned on Level II, except no patterns which cross the midline are used. The teacher should begin with simple symmetrical movements where both hands move in the same direction, i.e. both up, front, side, etc. When this is smoothly executed, she should progress to patterns where onehand is moved to a position opposite the other. These should be carried out in sequences of continued movement to produce a pattern. Next, the child should be able to produce alternating movements such as beating on a drum or his knees. Then he should be asked to follow patterns which are not exactly oppositional but differ in position, similar to patterns a flagman might use. Once this has been achieved the teacher can move back up to activities on Level II and I.

III. COMBINED VISUAL-PERCEPTUAL-MOTOR TASKS

This area is comprised of three successive phases which seem essential in the integration of the perceptual and motor skills necessary for writing. This discussion is an attempt to describe the progression involved in combining the component parts of any reproduction activity. Once a child has achieved a certain efficiency in both visual-perceptual discrimination and motor control or planning (as has been outlined in previous sections), he is ready to explore the relationships between these two areas. While providing a logical progression of activities to be used for the child who demonstrates difficulty in the area of visual-motor reproduction, this does not mean one is to eliminate the child's spontaneous attempts at drawing. On the contrary, such activities should be encouraged, for his attempts at self expression are also important in developing perceptual-motor skills.

A. FINE MOTOR PLANNING WITH A TOOL

In this first phase the emphasis is placed on the utilization of a well defined spatial area to provide a broad boundary within which motor movements are guided in terms of distance and direction. It is necessary that the child learn to perceive the relationship of movements to spatial area and begin to act upon this awareness. This is functionally demonstrated when the child colors pictures with adapted strokes and clearly defines the separate parts of the picture. For example, when the spatial area is a vertical box, crayon strokes used to color in this area should be up and down. If the box is horizontal, strokes should adapt to this directional orientation.

1. Level I: Unstructured

Activity--Coloring a simple picture.

The materials are a simple picture, the form of which allows for vertical, horizontal, and diagonal stroke patterns (for example a figure of a child with arms outstretched horizontally, legs extended in diagonal direction, and sections for clothing indicated) and a box of crayons for each child.

Have the children seated at tables. Say, "Color the picture as best you can".

Observations--To perceive the child's ability to separate segments of the picture and to match motor patterns to the given spatial area or form.

a. Set or Approach:

   1) Does the child attempt to color picture?

   2) Can he complete this activity?

b. Visual-Perceptual Skills:

   1) Does the child adapt direction of strokes to the forms provided, or does he continue the less efficient use of vertical strokes for all spaces, or does he rotate the paper as an alternative to adapting strokes?

   2) Does he demonstrate awareness of separate sections of shirt, pants, shoes by assigning different colors to these or by shifting his strokes for different sections, or does he ignore the smaller area segments adapting strokes only to whole body parts or larger segments?

Discussion--If the child makes an attempt to adjust his strokes (whether to large areas or smaller sections) but the lines extend beyond the area, his problem may reflect lack of motor control rather than the perceptual-motor match. This child would need practice primarily in confining motor movements to stay within the specific boundaries. However, his problem may also be due to an inability to make a clear distinction between separate segments of this picture and thus, he adapts his strokes only to the larger areas. This child will need assistance in perceiving the separate segments (Level II).

Occasionally a child may indicate awareness of the separate segments and appropriately adapt his strokes, but utilizes several colors within one area, such as making the boy's shirt multi-colored. This is felt to be part of an experimental stage during which the child's interest is primarily in the awareness and utilization of color rather than form and is spontaneous in nature. This child should be able to modify his performance when requested. There are, however, some children who do this work without apparent adaptation of strokes and who cannot modify performance when requested. These children may be focusing on color because of their difficulty in perceiving a perceptual-motor match. They will need help on Level III.

If the child simply scribbles over the whole area, it is evident he has no concept of confining and/or adapting strokes and thus, should be given practice in coloring at a lower level (Level III).

2. Level II: Moderately Structured

Activity--Ask the child to copy a model colored by the teacher. Different sections are designated by the use of different colors.

Discussion--At this level, emphasis is placed on helping the child who has begun to adapt strokes to major areas but has not yet been able to perceive the minor segments of a picture. The teacher should observe whether the child identifies segments by matching colors and whether he adapts strokes to the form. If he does not copy colors exactly, one should check to see if he can match colors and simply did not achieve the correct set for this activity. If the child has difficulty identifying segments, a progression of pictures with an increasing number of segments should be presented. If he identifies the segments, but his strokes do not adapt to the forms, he will need practice on Level III.

3. Level III: Highly Structured

Activity--To test and/or train at this level, give the child a series of isolated geometric shapes such as long thin vertical, horizontal, and/or diagonal boxes to color. If orientation of form is vertical in nature then the movement of strokes covering this form should also be vertical, etc.

Discussion--One would expect the child to be able to adapt progressively to vertical, horizontal, and then diagonal spatial areas without rotation of the paper by kindergarten age. If the child is able to color in the vertical orientation with evenly spaced strokes, but seems unable to spontaneously shift to the horizontal or diagonal, this is pointed out and he is helped to initiate the correct movements by helping him to move his hand in the proper directions. If he actively resists this progression to horizontal and then diagonal patterned movements one must consider specific neuro-motor difficulties preventing fine motor control.

Primary concern here is to help the child to achieve an exact match between the shape of the form and the direction of his strokes. When he has achieved these directional patterns he can be considered to have made the perceptual-motor match and can move on to Level II where more intricate adaptation is required.

B. TRANSLATION OF VISUAL FORM INTO MOTOR PATTERNS

In this second phase, emphasis is placed on the child's ability to visually perceive a line drawing and to translate this into a motor reproduction. In this phase, the visual stimuli remains present during reproduction. Patterns must be predrawn so that children do not have the benefit of being able to imitate the teacher's motor movements. The focus is on accurate reproduction of each pattern in terms of form and position. Spatial organization of forms on the page or accurate reproduction of size are not of concern at this time.

1. Level I: Unstructured

Activity--Copying line patterns.

The materials are a piece of 8x10 inch paper, a pencil and a set of nine 4x6 inch cards, each with a simple line pattern predrawn on it. Make sure the top of the card is apparent to teacher. Numbering cards on the back may facilitate assessment later. The designs should include vertical, horizontal, diagonal and curved lines. (See appendix C for sample.)

Have the children seated at desks or tables facing the teacher and close enough to see the stimulus cards which can be held up or taped on a blackboard. Do not mount cards on piece of colored paper, as some children will then draw a box around each of his reproductions.

Make sure each child has enough room to draw without disturbing his neighbor. If the teacher prefers, she may separate the children into smaller groups of four or five for this activity.

Give each child his paper in horizontal position and mark the top of the paper. Say, "Please leave your paper just as I give it to you, and keep your hands in your lap until I say GO. I am going to show you some drawings (designs, patterns, pictures - whatever word the children will understand) one at a time. You are to draw each one on your paper. When you have finished put your pencil down and your hands back in your lap." Hold up the first card and say "GO, Take your time and just do the best you can." When all children have finished, remind them to put their hands back in their laps. Proceed to next card and continue the same procedure.

If a child does not have room to fit all the patterns on one side, he may turn his paper over to complete the task. Be sure you know which is the top of his paper on this side also. Teacher may wish to number the child's reproductions if she notices that they are beginning to get mixed together. Remember, do not draw patterns on the board as the child watches, for it is important that the child make reproductions from a finished product without aide of watching the process of creating pattern.

Observations:

a. Set or Approach:

Can the child organize himself adequately enough in a group to sit in a chair and carry out a paper, pencil activity which requires accurate perception of visual stimuli held up at a distance from him and motoric representation of this stimuli?

1) Does he understand the directions given?

2) Can he carry these through to completion?

3) Does he show perseverance or embellish his reproductions?

b. Visual-Perceptual Skills:

Apart from behavioral components (be they psychological or neurological) preventing him from achieving the set and carrying out the activity, does the child have specific perceptual-motor difficulties?

1) Can he make forms resemble the model closely enough for the teacher to recognize them?

2) Is the pattern in the correct position (rightsideup, not reversed or rotated)?

3) Can he achieve the diagonal orientation?

Perceptual observations can be made from the finished reproductions and recorded at the end of the day. Each child's paper should be assessed item by item to determine if there is difficulty in one or more of the areas listed. These observations could be marked directly on the child's paper. To achieve a clear picture of the child's overall performance, one should note the frequency of a specific error. Overall performance may then be charted on an accompanying check sheet.

As long as the essence of the form is achieved, the child is considered to be able to make the translation of visual pattern to motor pattern. However, if he has difficulty in achieving the essential form, one should drop back to the lower levels (II and III).

Discussion--If the child makes numerous rotations or other such position errors (probably five or more is significant), the teacher should drop back to activities which give him practice in spatial orientation by manipulation of three dimensional materials and discussing their orientations. Such activities are outlined in detail on Level III of the section on Organization of Forms in Space. When this has been satisfactorily accomplished, she may move on up to Level II of the present section.

The ability to recognize and achieve diagonal orientation seems to follow appreciation of vertical and horizontal lines. If this is not achieved by this time, possibly it would help to point out the differences between vertical, horizontal and diagonal orientations and use three dimensional materials to demonstrate. One could use a ruler on a piece of paper to draw lines, allowing the child to manipulate the ruler and thus, the lines.

If there is evidence of overlapping or variations in size or irregular placement of forms, these should be noted as a separate problem from misperception of the form, if essence of form is achieved. In such cases, fine motor control or coordination and/or spatial organization should be assessed.

In all cases we are most interested in trends, or determining the factors which may be causing the child to have difficulty succeeding in not obtaining a specific score. The main purpose of these group diagnostic activities is to help the teacher determine individual strengths and weaknesses in order for her to plan and carry out a meaningful program. Thus, she should be aware of all the components involved in these tasks so that she may determine which aspects continually cause a child difficulty.

Precision of visual-motor reporductions, tested here, is directly related to a child's capacity to copy printed or cursive letters of the alphabet without rotations or reversals. If he cannot accomplish the above task easily, he certainly is not ready to learn to write letters.

2. Level II: Moderately Structured

Activity--The teacher draws simple designs (including single vertical, horizontal and diagonal lines, circular forms and combinations of these), one part at a time on the blackboard. The child should imitate the movement of each line drawn for any design first on the blackboard with the teacher. When successful, he can attempt to draw each pattern on his paper as the teacher draws these on the board.

Discussion--On this level we are interested in aiding the child who is unable to initiate independent copying of line patterns. This can be accomplished by giving him a clue as to the motor pattern necessary, by allowing him to imitate the teacher's movements. If the child still has difficulty reproducing even these simple designs from such imitations, the teacher should provide activities on Level III.

3. Level III: Highly Structured

Activity--Allow the child to trace line drawings, with or without stencils as needed. This should provide him with kinesthetic reinforcement of the movements required in reproducing the patterns. Within this level (using the same basic designs as on Level II), one could proceed from the maximum structural control of a thick wooden stencil to thin cardboard stencils, to tracing line drawings, to completing broken line patterns, to connecting the dots. By utilizing this progression one would hope that the child will be able to initiate simple patterns on his own and thus, proceed to Level II.

Discussion--This level should be considered for the child who is unable to initiate independent copying of designs or to receive benefit from imitation of motor patterns made by the teacher. One assumes the child's difficulty lies in the area of motor planning, thus, he needs a more constant structure to allow him to simultaneously experience the visual image and the motor movements required in producing that image.

C. ELABORATION OF DESIGN

The third phase involves the combination of the elements of fine motor control, memory for patterns (shape and size), visual organization of form in space, and visual sequencing. Thus, the child will be expected not only to draw basic designs but to vary their size and organize them into specific sequential patterns as well as to cope with the placement of these on the paper.

1. Level I: Unstructured

Activity--Copying shapes of varied (big, little) size, in correct sequence and spatial orientation on the paper. This activity is very similar to the one described in copying line patterns. The same basic skills of self-organization and ability to deal with perceptual-motor material are required, but the task is complicated by more variables being present. The child must not only be able to draw basic shapes, but make them the correct size, place them in the correct order, and place them in the proper place on the page. Additionally, he is shown on a whole page, not just one design at a time. All these variables must be considered before the child can gain any success in writing or copying letters and words. Ability to draw diagonal lines is not required in this activity. One may wish to use a triangle in place of the cross when diagonal orientation has been achieved; this ability is necessary to writing many letters.

The materials are an 8x10 inch sample card drawn off into three long horizontal spaces with three shapes (big and little) in each section (see appendix D) and a piece of 8x10 inch paper and pencil for each child (be sure to mark the top of each child's paper).

Have the children seated comfortably in a position to see the sample card easily. Give each child his paper in horizontal position and a pencil. Say, "Please leave your paper just as I give it to you, and keep your hands in your lap until I say GO. I am going to show you another paper, like yours, with some shapes drawn on it. You are to make yours exactly the same as mine. When you are finished, put your pencil down and your hands back in your lap, so I know you are all finished." Show them the model and say "GO... Look very carefully. Take your time and make it exactly the same as this one."

Observations:

a. Set or Approach:

1) Does the child appear to understand the task and recognize the different variables involved?

The same observations concerning self-organization made in copying line patterns are to be assessed.

b. Visual-Perceptual Skills:

These observations can again be made from the completed production and assessed in same way as with the line patterns, i. e. tendencies or types of difficulties should be noted.

Does the child have specific difficulties with:

1) Drawing shapes accurately?

2) Achieving the correct size?

3) Achieving the correct sequence of shapes?

4) Positional orientation, i. e. mixing up whole lines, doing whole top row on bottom line, etc.

Discussion--If the child has difficulty drawing shapes, drop back to Level III of phase B in which he can trace shapes or if necessary use stencils. If he does not vary the size of shapes drawn, first check his visual awareness of size, without the motor aspect. Checking for the visual awareness of sequence and position may also be necessary if either of these aspects seem to be hindering his motor performance (refer to the Visual-Perception Section).

If the child can visually discriminate size, sequence, and positional aspects of form, but has difficulty when motor reproduction is required, the teacher may utilize Levels II and III in which these aspects have been separated.

2. Level II: Moderately Structured

Activity--Have the child copy a model similar to one used on Level I, minus the size element. At this level, the size variable is eliminated, but we expect the child to be able to reproduce basic shapes. Here the emphasis will be placed upon the problems of sequencing; (1) position of forms within a row (first, second, third) and (2) position of rows on the paper (top, middle, bottom).

Discussion--If the child still has difficulty with this task, the teacher may separate the elements further. She could start by presenting single strips of paper with two or three forms in sequence drawn on each. Give the child a strip of paper on which he can copy the model sequence. Gradually, increase the number of forms on each single strip to five or more. This activity may be presented not only with the paper placed in a horizontal position, but also in the vertical.

A variation of this task which involves more emphasis on visual scanning and discrimination of forms in sequence as well as a motor element would be to have the child fill in the missing element of a sequence. The children have papers on which partial sequences have been drawn and the teacher holds up a completed model of these same sequences. In this task, it is important that missing elements do not fall in same position on each sequence.

Once the child resolves difficulty in this area, and if he has no difficulty with the size variable, return to Level I.

3. Level III: Highly Structured

Activity-- The child is asked to copy big and little shapes. Here emphasis is placed on effectively controlling size of forms reproduced. If a clear distinction between the sizes is not evident, he will need practice refining control of motor movements. The teacher should exaggerate differences in size by having the child trace very large and very small forms. If needed, stencils could also be utilized. A "middle size" should be introduced to further refine control. When the child can manage this, proceed to having him copy different size forms. When this has been achieved successfully, add another variable, and so on back to Level I.

* * * * * * * * *

The highest level of perceptual-motor reproduction ability is seen when the child cannot only integrate visual and motor components (as in copying), but can also produce motor patterns from memory and can translate auditory stimuli into motor reproductions. In this latter,

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the child has to receive stimuli auditorily (with no visual stimuli present) and to recall visual stimuli. If a child is to succeed in academics, he will have to so integrate basic modalities in various combinations. In order to learn letters and numbers, he must be able to visually match symbols, reproduce them from a visual or auditory stimulus (and eventually from memory), control spatial dimensions, and properly sequence the elements.

The activities mentioned for diagnostic purposes on Level I of each phase are not the only ones that could have been used. They were given in detail to demonstrate the method by which one may initially gain information concerning any sub-area before teaching it. On Level I the teacher can observe each child's performance in activities which the child has to organize himself to a great degree. It is of primary interest to note whether each child is aware of and can cope with the variables inherent in the task. To do this, the teacher is asked to minimize other elements (verbal, motor etc.) and observe the child's mastery of elements being evaluated. She should not teach the activity first if she wants to use it diagnostically.

It has been found that performance often is quite variable in children with learning problems when their difficulties lie mainly in the area of self-organization. Performance can be quite different from day to day and depends to a great extent on what type of activity (success, failurewise) precedes the evaluation. For these children it may be profitable for the teacher to repeat the activity, varying the stimuli used, two or three times in one week to get a clearer picture of performance and to insure that the set is understood. It is still important to use the directions given, however, to avoid making the task too easy and thus, not achieving the information sought.

Although the teacher is urged to follow the instructions given for initial diagnosis, we certainly do not mean to intimate that evaluation is not an on-going process. Obviously after teaching or aiding a child achieve a certain skill, the teacher will want to retest the child's grasp of this skill. The teacher should be careful, however, that the child does not learn to perform an activity only under certain circumstances and thus, being incapable of transferring the basic underlying skill to other situations.

APPENDICES A - E

VISUAL-PERCEPTUAL-MOTOR SECTION

APPENDIX A: RESULTS OF GROUP DIAGNOSTIC PROCEDURES

Level: III - A 1

ACTIVITY Organization of Form in Space

DATE

Ranking	Name	SET					PERCEPTION					
		Goal oriented	Attempt copy	Complete task			Correct spatial orient. on paper	Correct relation. of parts: right end up	Correct overlap or insert			
1	**JIMMY**								/			
9	**WALTER**						X	X	X			
3	**DANNY**						X	/	/			
4	**DOMINIC**						X	/	/			
7	**EDDIE**							/	X			
2	**BOBBY**						X		/			
5	**GEORGETTE**						X	/	/			
6	**BARBARA**						X	/	X			
8	**DEBBIE**							X	/			

COMMENTS Meaningful picture used: (airplane and basket of fruit on table)

All got essence of form as a whole.

All had difficulty with details of position; possibly they could not handle so many variables at once.

Need to check spatial relations - Matching places on paper
Try non-meaningful arrangement.

APPENDIX A (Continued)

ANALYSIS OF CHILDRENS' PERFORMANCE

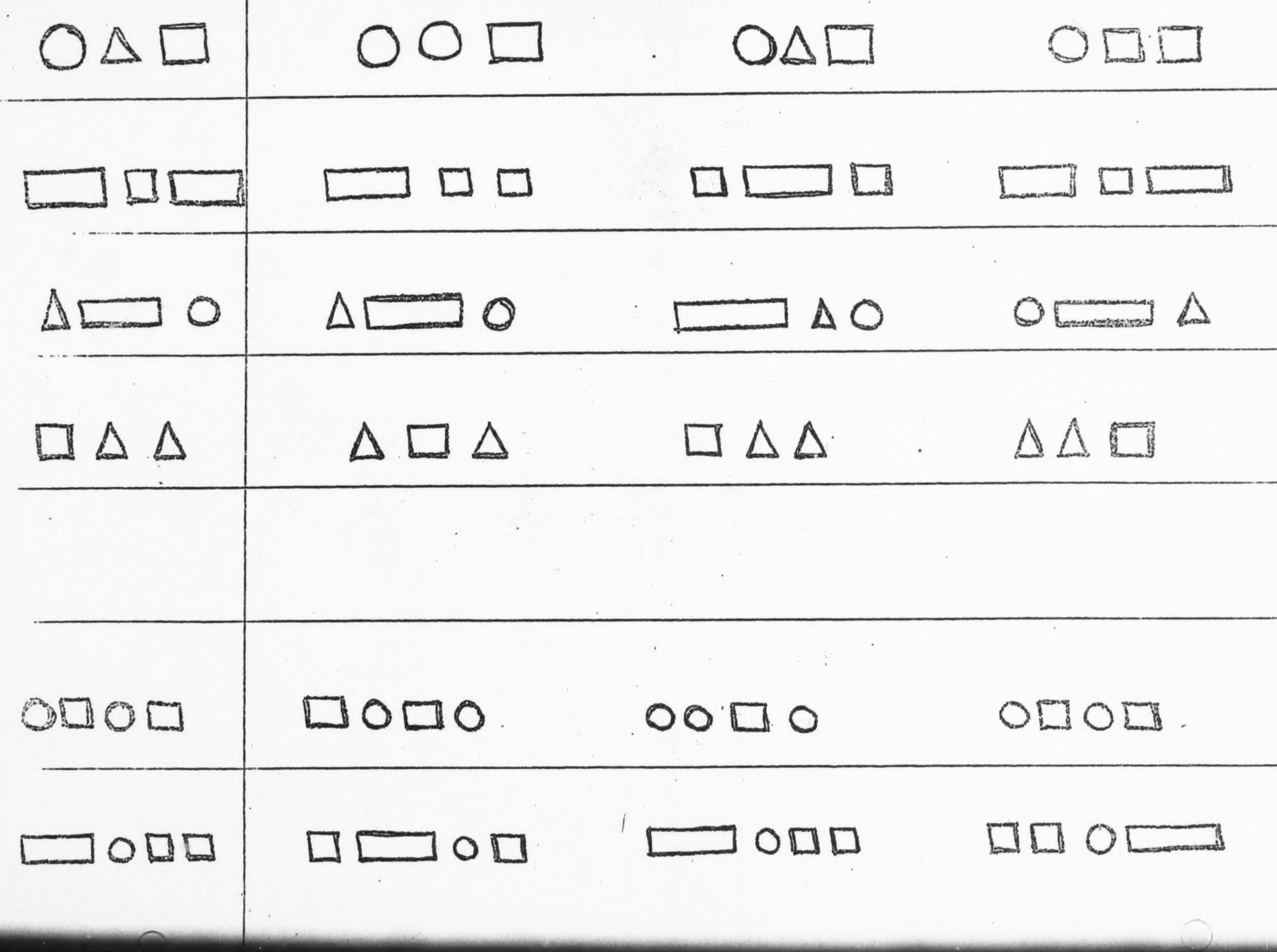
This check sheet can be filed for easy reference at a later date. Thus, the teacher will quickly be able to recall that Jimmy was the most successful in the organization of forms in space, demonstrating difficulty only in the most refined aspects of this particular task.

She can see that Bobby was able to achieve the essential relationship of parts to each other, but was unaware of positioning on the paper as a factor to be considered, and that he also had some difficulty with the relationship of parts that were supposed to overlap.

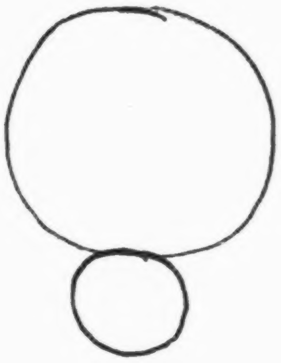
Although Walter was able to achieve the set and carried the task to completion, he had little success in accurately relating the parts to each other and in the positioning of these on the paper.

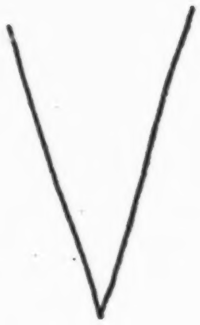
Everyone, except for Debbie and Eddy and Jimmy, had difficulty with spatial orientation on the paper, at least when other factors must also be considered. As all children, except Jimmy, had some difficulties in almost all of the skill areas being assessed, it would be useful to assess each of these skill areas in isolation, as is outlined at Level III of the Organization of Form in Space.

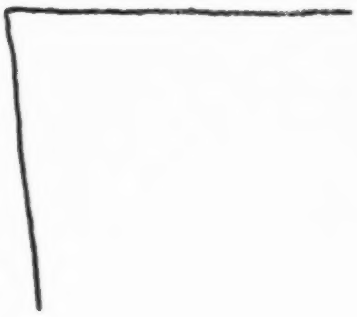
APPENDIX B: VISUAL MATCHING OF SEQUENCE (Section III A3)

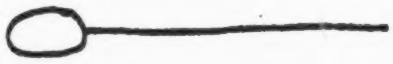


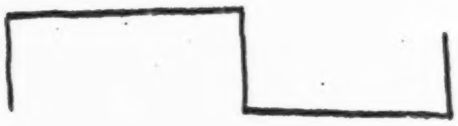
APPENDIX C: CARDS FOR COPYING (Section III B1)

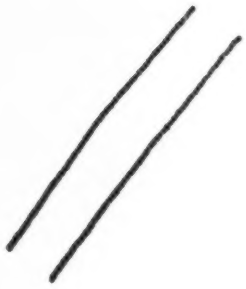


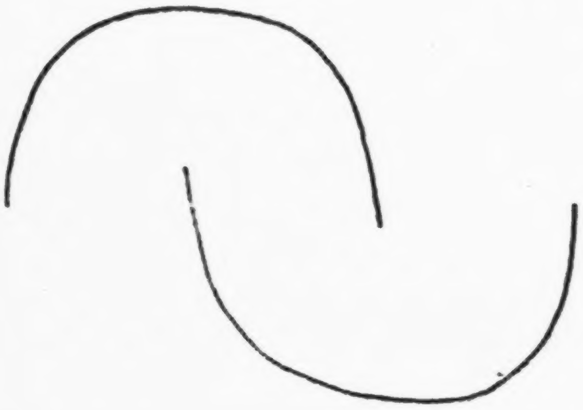


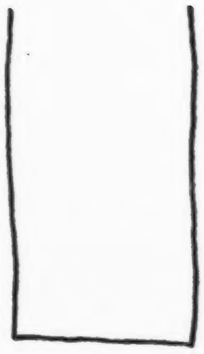


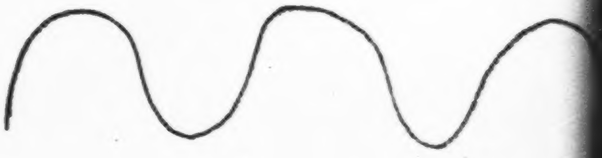












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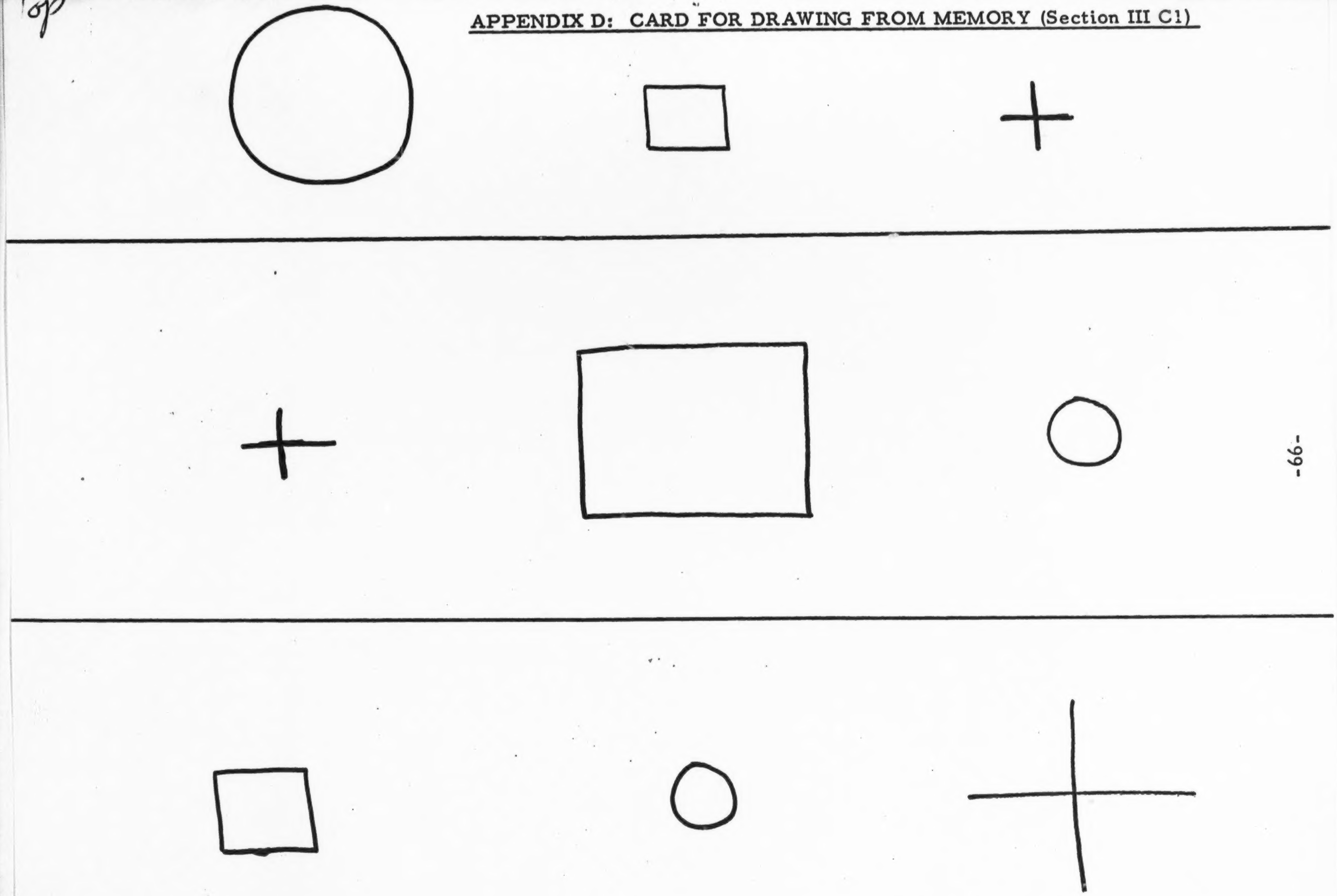
APPENDIX D: CARD FOR DRAWING FROM MEMORY (Section III C1)



APPENDIX E: RESULTS OF GROUP DIAGNOSTIC PROCEDURE

Level
III B3

ACTIVITY Elaboration of Design

DATE

		SET						PERCEPTION				
Ranking	Name	Difficulty understanding directions	Attempt to follow directions	Ability to stay with activity	Perseveration			Form	Size	Sequence	Position of row	
4	**JIMMY**				X					X	X	
	WALTER	ABSENT										
2	**DANNY**							X				
3	**DOMINIC**							X	X			
5	**EDDIE**	X			X				X	X	X	
1	**BOBBY**											
7	**GEORGETTE**							X	X	X	X	
8	**BARBARA**		X		X			X	X	X	X	
6	**DEBBIE**				X			X	X	X	X	

COMMENTS

APPENDIX E (Continued)

ANALYSIS OF CHILDRENS' PERFORMANCE

From this check sheet, the teacher can see that Bobby is the most successful in this highly integrated visual-perceptual-motor task. If Bobby can achieve the particular set necessary for the task, his skills in this area are generally good.

Eddie had difficulty achieving the set in this particular integrative task; the presence of so many variables was the greatest factor adversely affecting his performance.

Danny's performance would seem to have been affected only by his fine motor inefficiency.

It can quickly be noted that Barbara was unaware of the task and simply could not perform on such highly integrative level.

On the basis of these results, the teacher can plan to further assess Danny, Dominic, Georgette, Barbara and Debbie's ability to translate visual form into motor patterns if such has not previously been done. She should further check awareness of size, sequence and spatial orientation for those who had difficulty with these aspects, to determine whether it was the perceptual or the perceptual-motor aspects which were not well established. This then will provide her with a more detailed analysis of which areas need to be stressed in teaching.

SECTION THREE: LANGUAGE

Chapter One

UNDERSTANDING LANGUAGE PROCESSING AND DEVELOPMENT

Language has been defined as "a structured system of arbitrary sounds and sequences of sounds which is used, or can be used, in interpersonal communication by an aggregation of human beings, and which rather exhaustively catalogs the things, events, and processes in the human environment." (Caroll, 1953). The study of language has consumed the time, energy and imagination of various professional disciplines for decades. Anthropologists have been interested in the phylogenic study of language and their research has demonstrated that it is verbal language which distinguishes man from his fellow primates. The ontogenic study of language at various points in the life of an individual has been the concern of physicians, educators, psychologists, and speech and language therapists.

The utterance of a young child's first word is indeed a milestone in his life and in the lives of his parents. It may be assigned many meanings: that he is developing normally, that he wishes to communicate with the individuals in his environment; as importantly, it can act as reinforcement for his parents' time and efforts in rearing him. The doctor may use language development as one indication that a youngster is continuing to grow and develop in a normal fashion. Once a child enters school, be it nursery school or kindergarten, his speech and language behavior is of concern to the educator. His ability to communicate can affect his social behavior within his peer group and may have a decisive effect on his willingness and ability to respond positively in the educational setting.

The youngster who fails to develop speech and language in a normal fashion and whose speech and language ability is less than average is at a distinct disadvantage from his more verbal peer. The ramifications of what may first appear to be a very benign problem are far reaching and not to be underestimated. The child with a language problem may be intellectually, emotionally, or socially limited by his difficulty in communicating. We have learned that there is a relationship between intelligence and language performance and that the child with a language problem may be denied the fulfillment of his intellectual potential. Subsequently, he may experience continued academic failure despite the fact that his so called "potential" indicates he should perform more normally.

A youngster who experiences repeated difficulty in understanding his peers or the adults in his environment, or in making himself understood, loses interest and willingness to continue his verbal attempts. He may substitute physical enactment for verbal communication or he may prefer to shut himself off to some degree from the verbal environment. Regardless of the exact nature of the problem, it is almost certain that the youngster with a language problem who does not receive appropriate help will attempt to compensate for his difficulty by altering his behavior in some fashion. The behavioral and emotional ramifications of communication difficulties are numerous and run the gamut from very mild involvements to problems which are so great in scope that it is difficult to discern whether this youngster has primarily an emotional disturbance or primarily a language problem.

Early recognition of the problem, accurate diagnosis, and an individually designed remedial and educational program are of utmost importance to the youngster with a language disorder. At times the failure of that first word to appear is the first indication that a child has a problem. Recently, however, with new advances in medical, scientific, and educational knowledge and skill, indications of potential abnormalities in children, which may include a language difficulty as one symptom, are recognized at a much earlier age. The eventual adjustment and success of an individual who has difficulty in communicating may be dependent on how early we recognize the fact that he has a problem and plan accordingly. Early diagnosis and appropriate planning forestalls the encroachment of secondary problems. It also exposes the child to appropriate remedial and educational techniques at a young age when he is most responsive to educational and behavioral modification and when the gap between himself and his so-called normal peer has not been given the opportunity to widen unduly. Language is an important and necessary tool for the development of conceptual behavior. Therefore, when there is a disruption in normal language functioning, all aspects of learning may be affected. The youngster with a language problem who is allowed to go unnoticed may be rendered educationally unfit over a period of time.

At this point, clarification of the terms communication, language and speech and how they apply to the present discussion appears warranted. Communication is the broadest term since it includes verbal as well as non-verbal modes. The term, communication, describes the whole process whereby a message is exchanged between two or more persons -- that is, not only the message itself but the interpretation and feeling tones of both the received and the communicator. Language is mainly seen in the comprehension or formulation activity of one person in the communication process. At the preschool level, this is primarily oral language (speech) but, later, written language becomes part of the individual's language system. Speech and hearing processes provide the basis for the development of language as a tool of communication. Speech, in its strictest sense, encompasses the inter-related movements of the oral musculature to produce basic articulation patterns, as well as phonatory adequacy and rate and fluency of utterance.

Normal language acquisition and usage is dependent upon the intactness of the peripheral sense organs of hearing and the motor mechanisms for speech. It is also greatly affected by experiential deprivation and psychological distress, which affect both the child's experience and willingness to join in the communication process as well as his skills in speech and language. Finally, the human nervous system governs every aspect of an individual's functioning and disruptions are capable of producing many problems, speech and language disturbances being but one of them. The present curriculum concerns those children who are inefficient in their language (including speech) skills, whether the cause be cultural deprivation and/or neurological dysfunction.

In evaluating the language function of such psychoneurologically inefficient children, the information processing model (Hainsworth and Siqueland) has been used to clarify the developmental, diagnostic and therapeutic-educational aspects of language. This model provides a framework for breaking down language function into its component parts.

FRAMEWORK OF LANGUAGE PROCESSING

Comprehension

A. ORIENTATION

1. Awareness of Sound - Awareness of auditory sensation as being distinct from other sensory information.

2. Selective Listening - Ability to select and attend to the sound that is meaningful in the environment at that point in time and space, and simultaneously inhibit responses to other incoming auditory stimuli.

B. INTAKE

1. Discrimination-phonemic - Ability to recognize verbal and non-verbal auditory patterns as having distinct phonetic elements in time (word units).

2. Sequencing - Ability to decode the temporal and spatial pattern of words (syntax).

3. Retention - Ability to hold an auditory pattern in order that it may be decoded.

C. INTEGRATION

1. Association - Ability to relate incoming information with past learning and experience.

2. Set Selection - Determining appropriate mode or category of response.

3. Cognitive Transformations or Reasoning.

Formulation

4. Retrieval of appropriate alternate response sequences.

5. Selection of precise response sequence to convey information.

D. OUTPUT

1. Phonemic Sequencing - Ability to meaningfully order outgoing auditory-vocal patterns at a phonemic level.

2. Word Sequencing - Ability to meaningfully order outgoing auditory-vocal patterns at a syntactic level.

3. Articulation - Ability to utilize motor-speech mechanism to produce intelligible speech.

E. FEEDBACK

1. Intrapersonal - Self-monitoring mechanism.

2. Interpersonal - Monitoring by environment.

Orientation. Normal peripheral hearing is a pre-requisite for verbal communication and is, therefore, assumed for purposes of this discussion. The individual takes his cues primarily from the auditory world. He must be aware of auditory sensations as being distinct from all other sensory information. At the most elementary level, and in the grossest sense, this assumes that the individual is capable of determining whether sound is present or absent. Auditory orientation also refers to the ability of the individual to determine and attend to the sound that is meaningful in his environment at a particular point in time and space, while simultaneously inhibiting his responses to other incoming stimuli. This ability to localize a particular sound and distinguish it from other sounds occurring concommitantly is also referred to as foreground-background perception.

Intake. Once an auditory stimulus has been localized and attended to, the incoming information is ready to be decoded or processed as a prerequisite to comprehension. Intake of information of any type consists of a series of sorting, matching and seriation tasks. The incoming auditory signal is first discriminated: that is, it is recognized as a specific series of auditory elements possessing individual qualities making them distinct from all others and therefore recognizable. This auditory information is received in a particular order and must be retained in that order. This ability to internally manipulate the temporal and spatial pattern of auditory information is referred to as sequencing. Although the time lapse between a question and answer is often only seconds, the listener is required to retain the speaker's message in the correct temporal order, to decode it, and formulate his own answer. Retention is defined as the ability to temporally hold an auditory pattern in order that it may be decoded and responded to.

Integration. Between question and response, a great deal of symbolic manipulation occurs at various cognitive levels. This results in the individual's ability to respond to what he has heard with an appropriate answer. Integration can therefore be considered to be the various internal manipulations carried out by an individual to relate the incoming information with his prior knowledge and to formulate a meaningful response. This includes retrieving appropriate cues from past learning and experience and comparing them with the incoming auditory information. The aspects of language processing skill discussed thus far result in the ability of the individual to assign meaning to or comprehend the auditory information he has received.

At this point the individual then enters into the preparatory steps for formulating, or encoding, his response. Of all the possible information available to him he must analyze the requirements of a particular situation and select the one bit of information that is the most appropriate. Language is verbal symbolization, that is, a particular object, event or situation is transformed into agreed-upon verbal label in order that it may be discussed. However, any verbal label may be manipulated on a variety of symbolic or conceptual levels. For example, the word "hat" to one individual denotes the pink-flowered head covering that Mother wears to church on Sunday. Whereas to another individual the word "hat" encompasses any type of head gear worn by male or female. The conceptual level at which an individual functions is dependent upon his ability to discern the specific rules governing a particular object or situation and apply them in one of a variety of situations removed in time and space. As the individual attempts to formulate his response, he goes about retrieving and subsequently discarding a variety of verbal responses until he arrives at the one which he considers to be the most acceptable.

Output. Once having selected the appropriate verbal response, the individual must then transform his response from a symbolic to a specific language level, that is he must meaningfully order the outgoing auditory vocal pattern on both a syntactic and a phonemic level. The syntactical level refers to the word ordering or meaning units. The phonemic level refers to the individual units which comprise the word. In order that the verbal message be understood by the listener it must be articulated intelligibly. Articulation involves the utilization of the motor speech mechanism to produce an intelligible verbal output.

Feedback. Feedback is an integral aspect of the communication cycle and it is this aspect of communication which allows the individual to judge the accuracy and the impact of his response. There are two aspects of feedback: one being the individual's own self monitoring mechanism and the other being the environmental feedback.

DEVELOPMENT OF SPEECH AND LANGUAGE

A child begins life unable to comprehend or to produce verbal language, but with the potential for learning the rules which govern both these highly complex skills. Like other developmental functions, language is learned in an orderly sequence. The age of onset of a particular skill may be subject to individual differences or environmental influences, but the order in which these skills is learned is usually uniform and predictable. The more clearly the developmental sequences involved in communication are understood, the better equipped the teacher is to judge the stimulatory activities which will enhance the child's language development and sophistication. At each chronological stage of development the child is experimenting and demonstrating growth in all areas of communication. Parents, siblings and teachers can provide the appropriate sources of stimulation and experimentation which will aid him in attaining new goals.

INITIAL LANGUAGE DEVELOPMENT

Before the appearance of a child's first word, he gathers considerable experience with language. From birth on, a learning process is taking place which enables the child to develop the tools or prelinguistic skills which prepare him for meeting the demands for verbal communication that society will place upon him.

The nature of the relationship between the infant and his mother or caretaker is an important one to this learning process. In a warm and satisfying emotional environment, the skills which are the stepping stones to verbal communication are encouraged to flourish. One of the basic premises of the traditional view of language acquisition has been to assume that an infant begins to acquire the tools for communication by producing the phonemes of the language he hears spoken around him. Initially, an infant engages in vocal play or sound production for his own pleasure. The sounds he produces consist primarily of open-mouthed vowel-like noises, cooing and small throaty sounds. These frequently occur concomitantly with and reflect states of pleasure and displeasure. The sounds produced during feeding, for example, will differ from those produced during a state of agitation or discomfort. At this point in his young life, the infant engages in sound production not in an attempt to communicate but solely for the pleasure he derives in engaging in this activity. This auto-stimulation results in auditory as well as kinesthetic feedback to him.

Eventually, familiar faces, objects, and sounds within the infant's immediate environment act as further encouragement for his sound production. A parent can encourage pleasurable sound production, by responding to the child's noises with similar sounds. Initially, the baby will not attempt to imitate the parent's sounds, but he will usually respond with more vocalizations, as a result of the parent's intervention and stimulation. The infant's vocalizations are thus encouraged and increased by the reinforcing properties of social stimulation.

The infant's overall awareness of his environment, particularly the auditory world, is of great importance to his language development and can be encouraged and enhanced by his parents. The young infant (1-3 months) initially reacts to auditory stimulation in a gross and undifferentiated fashion. He will usually startle in response to loud sounds and cease his activity in response to quiet sounds. In terms of the language model discussed earlier, this might be referred to as the "orientation" aspect of language development. Auditory awareness can be developed and refined by gradually increasing the child's tolerance for and awareness of sounds. It is important that this be done within the child's visual field, so that he becomes familiar with and unafraid of strange noises. As his auditory responses become more refined and differentiated, the infant begins to localize sounds by turning his head and eyes and responding to the human voice more than to gross sounds. This developmental awareness can be encouraged by verbally cueing the child to familiar sounds within the environment, for example approaching footsteps, the ringing of a telephone, running water, familiar toys, etc.

Initially, the infant's auditory awareness of his environment is one of simple orientation. His responses to sound are gross, his attention is brief. He localizes for only short periods of time and still has difficulty distinguishing foreground noises from background noises. As his auditory discrimination becomes more sophisticated, he learns to make gross discriminations: for example, his mother's voice from others, pleasant from unpleasant tones, inflectional changes, etc. He is now doing more than merely orienting himself to his environment; he is attempting to make sense out of the auditory world and understand something about what his senses are "taking in". With reference to the information processing model, we might say that this is the "intake" aspect of language development.

Somewhere around 5 or 6 months, the infant's pleasurable production of sound patterns gradually becomes more sophisticated as he begins to combine vowel sounds, to experiment with consonants, and to produce single syllables. The selection of sounds to be practiced is no longer a haphazard or random one. The infant practices those auditory-vocal patterns which are common within his environment, indicating that he is beginning to integrate and to try and approximate what he hears.

During this period, mother's encouragement and echoing of his vocal productions occasionally results in direct imitation of sound patterns. This type of vocal play between mother and child should be encouraged. The infant is not only getting practice with the basics of speech production, but he is also learning the social value of verbal communication. Reward for the child's efforts at speech production causes certain vocal patterns to be repeated and others not similarly rewarded to become extinct.

At some point, the parent interprets one of the child's utterances as a meaningful word, thus bridging the gap between prelinguistic and linguistic development. The young child's first attempts at word productions are really approximations which are interpreted by the parent as being meaningful words (Irwin, 1952). These word approximations become more refined and precise with age. Initially, a parent rewards attempts which even vaguely approximate a meaningful word. As these word approximations appear with more frequency, more clarity is demanded of and sought by the child, and in this manner more complex verbal forms are attained (Skinner, 1967).

Before the actual appearance of that first word, and continuing for sometime afterward, the child engages in a great deal of jargon production. Jargon consists of a wide variety of sounds varying in pitch and intensity and strung together so that they appear to be sentences. This represents the child's attempts at word approximations as well as connected speech.

During this period, a great spurt in the comprehension of simple language forms occurs. On verbal command, "bye-bye" and "patty-cake" are usually engaged in with great delight. At this point, it is wise to keep language simple, brief, and repetitive. The youngster of this age is beginning to demonstrate more response to language. He will usually come when called and may designate familar objects when they are named. Language production or formulation is confined primarily to naming, and comprehension exceeds the spoken vocabulary. At the same time that she provides appropriate stimulation and language experience for the child, the mother continues by necessity to rely on physical as well as verbal manipulations.

During the period from 18 months to two years of age, between 10 and 20 words may be used meaningfully by the youngster. These words consist primarily of nouns, particularly the names of people or familiar objects within the environment. This is also a period of echoic speech in which a child may imitate words used by adults perfectly, even to intonation and inflection, without knowledge of what the words mean. This is also a period in which the child may string together various sounds to develop words which have meaning for him but for no one else.

The child between 18 months and two years of age understands a great deal of what is said in brief and concrete form, and is beginning to appreciate language as a tool for social interaction and communication. Parents should take advantage of this new-found verbal skill by gradually making the transition from physical to verbal monitoring. This period of significant verbal growth will see the appearance of simple two and three word sentences, the beginnings of pronoun usage, and the comprehension of simple questions put to the child. As the child approaches his second birthday, the use of jargon generally decreases rapidly, until it is almost negligible. At this time it is important that responses to speech be encouraged by the mother so that the youngster gradually begins to realize that verbal communication supercedes physical enactment of one's needs or wants.

Between the second and thrid year of life a greater growth in vocabulary occurs within a shorter period of time than during any other period of life. Part of this is due to the fact that it is during this time that a child discovers the use of "the question." The question is a major information accumulating tool for youngsters of this age. The acquisition of new and meaningful language forms is greatly influenced by the attitudes and efforts of the youngster's parents and siblings.

Children within this age range are usually interested in new words relating to things in their environment. They enjoy engaging in long monologues during which they demand individual attention. Story telling is an important language activity at this time and children are often adamant in their demands for repetition. Good speech models are important for these children, without the adult continually demanding verbal performance.

LANGUAGE DEVELOPMENT OF THE PRESCHOOL CHILD

Since the observation and teaching activities included in Chapter Two of the Language section concentrate on activities applicable to the preschool child, a careful look at language development within this age range is needed. There are many good reference sources for detailed descriptions of language development in children: Battin and Haug (1964), Templin (1957), and Bangs (1968) to mention just a few. We will briefly summarize the general consensus of opinion concerning children's language acquisition between the ages of three and five. If the reader wishes more detailed information on when children achieve specific milestones, he is referred to the above sources. The present discussion will concentrate on how language develops. Two aspects of language development, which are of particular relevance to later discussion, will be examined in some detail. The first is a discussion of the normal sequence of articulation development and the second is a discussion of development of language constructions (sentences) from a linguistic point of view. Each present basic information needed to read the observation and teaching discussions in Chapter Two.

Discussions of the development of language acquisition are generally presented in terms of the child's language formulation ability (his output). This assumes that the child's language comprehension and his language formulation ability follow the same ordered sequence of development, with comprehension being slightly ahead of the child's ability to formulate his thoughts. So, although examining an individual child's language competence requires looking at both aspects of a child's language differentially. The assumption that comprehension and formulation proceed simultaneously is acceptable for a discussion of normal language development.

General Sequence of Development.

At age four or five when a child enters school, he has usually achieved a fairly sophisticated level of verbal communication. However, this is made possible by an orderly developmental sequence of language formulation experiences. The child has begun, usually, by naming concrete objects and familiar people within his environment. That is, he has learned that particular sound patterns represent familiar objects, events or situations within the environment. We might call this the labelling stage of expressive language.

It is quite evident that the child goes from gross to finer distinctions. For example, all men are initially "Daddy" until the child is able to make the distinction between Daddy and all other men. All chairs are labelled "chair" until the child can make the distinction between a straight chair and a rocking chair, big chair or little chair, my chair, Daddy's chair, etc. Linguistic studies (Menyuk, 1968) have observed that the assumption that all single morpheme utterances (words) are nouns was not borne out in her very limited sample of children. Her group indicated that single word production included words from noun, verb, adjective and prepositional categories. The child utilizes inflectional patterns and gestures to expand the meaning conveyed by his single words. For example, "go" can be made an exclamation, a declarative or an interrogative by changing the inflection and adding appropriate gestures.

At the same time the child begins to combine words into two and three word phrases or sentences. Initially these connected speech attempts are automatic speech conglomerates, for example, "Let's go", "All gone", "No more". Interspersed with these recognizable speech attempts is considerable jargon which reflects the youngster's inventive usage of language and approximation of connected speech.

Soon the child begins to build more sophisticated language sequences by expanding his vocabulary to include words from several categories. The child progresses typically through the following sequence in incorporating words into sentences: nouns, verbs, simple prepositions, pronouns in place of nouns, descriptive adjectives and adverbs. In sentence building he progresses from the use of automatic phrases to noun verb-noun phrases and pronoun-verb-noun phrases. Then as he begins to incorporate descriptive adjectives and modifiers to enhance or embellish his speech patterns, connecting words are used and this makes his language formulation very similar to the models he hears within his environment.

As his language formulation skills and speech patterns become more proficient with age, a greater percentage of what the child says becomes comprehensible to the listener. The child enhances and stabilizes his vocabulary and ideas with recurrent questioning. His play at this level is frequented by extensive verbal descriptions of his activities and he enjoys relating simple experiences. His articulation gradually improves through practice.

Thus, at the point the child enters school, he is usually able to verbally organize familiar objects, pictures and events. He enjoys relating automatic speech sequences such as little songs and nursery rhymes. He also begins to categorize concrete objects in terms of their similarities and differences and can make associations in language between past and present. In terms of his grammatical proficiency, he has been using plurals and past and present tense forms for some time, and now can express himself with a fair degree of accuracy in compound and complex grammatical forms. His grammatical errors usually occur with words which are exceptions to some basic grammatical rule, i.e. unusual verb forms or pluralizations.

Developmental Milestones. By the age of three, children have at their command: nouns, verbs, some pronouns, some adjectives and very concrete plurals to put together into sentences. Between then and the age of eight, they do not significantly change the percentage of their speech taken by these parts of speech. This suggests that they have established the linguistic structures needed to use these kinds of words by the age of three. Prepositions and articles also seem to be used frequently at the age of three and increase only slightly between the ages of three and eight. Conjunctions on the other hand are practically non-existent at the age of three. They develop rapidly between the ages of three and five, and seem to have stabilized their development by the age of five (Templin, 1957).

Up to this point, children are primarily experience-bound and this governs the way their language develops. They learn nouns, action verbs and pronouns first since these are the most relevant labels for what is happening in their environment. They begin language construction activities by combining these parts of speech into simple sentences. Soon, they add more pronouns to their vocabulary and begin to use descriptive adjectives, particularly those denoting size and shape factors which define the objects in their environment. For example, children learn big and little very early since these concepts are easily demonstrated visually and are often labelled in their presence. For the same reason, they learn "good", "bad" and "pretty" early.

Next, children's transformation of words into more sophisticated grammatical forms starts to develop. For example, they learn that basically plurals are made by adding the morpheme /s/ or /z/ to any noun. It is common to find that young three year olds pluralize many words inappropriately using these morphemes, i. e. "mans" and "bootses". Such primitive pluralization, while incorrect, is adequate at this early stage. Children soon learn where such a plural is acceptable and where it is not; then they begin to form the more irregular pluralizations.

The language constructions of three year olds are in the form of phrases and simple sentences in the present tense. The average sentence length is four to five words. Thus, at the age of three, most children have developed kernel sentences. These are the basic language forms which will be expanded later into full sentences. However, three year olds use very few transformations, i. e. conjunctions, negatives or transformations of word order which form a question (Menyuk, 1969) .

In their fourth year, children elaborate their language further. They begin to have enough idea of time and space to want to describe past activities. Thus, the past tense begins to show in their verb usage. They also elaborate their understanding of adjectives by learning to use the comparative form. When children have this background of verbal knowledge at their disposal, they begin to form more complex sentences and employ simple transformations in their language construction. For example, most four year olds are able to form questions, use negatives and form compounds (compound subject and predicates as well as compound sentences). Although children seem to have all the basic structures for primitive transformations, at four they use them in a very inconsistent fashion. However, they do demonstrate some ability to change word order and add and delete language units efficiently enough to verbalize many ideas (Menyuk, 1963).

At age five, the child continues to elaborate his language. In terms of vocabulary development, he begins to use adverbs in an adequate fashion and adds descriptions of future action into his language. He continues to stabilize the rules for generating grammar in appropriate grammatical forms and sentence construction. He continues to practice these until he can use them more efficiently. Transformations become stabilized so the child can use complex, compound sentences in his attempts to communicate.

Development of Language Construction

It is apparent that children's ability to express themselves through speech and language develops from a primitive language form at age two to quite sophisticated language forms between the ages of five and six. For instance, a two year old who says "Me drink cup" is using an appropriate language construction for his age, whereas the same sentence from a four year old would be indicative of gross language delay. A four year old might be expected to say, "I drink from my cup."

This section briefly traces the child's development of language constructions between these ages. An understanding of the sequence of such development from a linguistic viewpoint, which emphasizes how language construction develops rather than when, will provide the basic background material for observing and stimulating such language facility in the classroom.

Tracing the child's development of putting words together in sentences involves understanding three components of language construction, i.e. the order in which the words are put together into sentences, the grammatical forms used, and the length and complexity of the utterance. These three components tend to develop simultaneously and the child incorporates these into his own linguistic and grammatical rules as he develops language facility. In linguistic terms, syntax refers to the rules by which words are ordered and so involves sentence length and complexity. Morphology refers to the grammatical forms made by transforming words according to the rules of pluralization, tense change, addition of prefixes and suffixes, etc.

Paula Menyuk (1969) hypothesizes...."that the child's procedure in understanding and generating utterances and in changing the level of his competence in understanding and generating utterances is the following:

1) He acquires some rules to understand and reproduce sentences.

2) Using the rules of grammar, he samples the utterance and by some matching procedure he determines the structural description of the utterance.

3) Using the rules of grammar, he generates an utterance but sometimes does not complete the order of rules needed to generate the completely well-formed structure.

4) He stores the rules of grammar but only has enough computing space or memory to store a subset of the rules of grammar of his language.

5) The set of rules of this grammar is expanded when computing space increases (number of rules increases) and when computing space is recognized (additional restrictions, type of properties of lexical items, and types of operations)."

Lee (1966) has noted that there is a discrepancy "between vocabulary and syntax" which she feels is highly significant. She feels these two features can develop independently of one another, particularly in children with deviant language development. This causes her to hypothesize about further factors that might contribute to such discrepancy in development. It seems possible that some children understand and use a number of words (concepts) at a higher level than their sentence formulation would indicate. In this case, she feels the child does not have the organization, retrieval, or ability to store the sentence patterns, although he is able to store the labels related to concepts.

One of the children enrolled in the research classroom provided an excellent example of this type of discrepancy. Analysis of her language construction indicated that the content and understanding of words per se was at a substantially higher level than sentence formulation. Her sentences were telescopic, indicating difficulty in sentence expansion and, at the same time, she demonstrated difficulty with word ordering.

Thus, to understand the level of a child's language construction skills, two different aspects of language formulation must be examined: a) content and b) how the content is presented by the speaker, e. g. sentence construction. To reiterate in another way, semantics and syntax must be observed independently and contrasted. Based on some of the material presented by Lee (1966), tracing the sequence of language construction development helps to better understand how language is generated.

As the child begins to combine words, there appear to be certain words which are more likely to occur with other words. For example, "a" might be conbined with "car" or "chair", but is unlikely to be combined with "here", "there" or "go". Children apparently internalize and experiment with certain grammatical rules even at this level. Eventually this basic construction is expanded into the noun phrase, e. g. "my big car", "no more car", "the other big car". The noun phrase might be described generally as including an article or possessive, plus a quantifier (adjective), plus a noun.

Simultaneous with the development of the noun phrase, children are experimenting with verb phrases in two-word verbal combinations, for example, "see car", "push it", "go up", "fall down", "I see", "Mommy do." Rules governing the construction of these phrases provide the foundation upon which further expansions are made. If the child is unable to manipulate these basic rules, he will not have the background for further grammatical expansion. These phrases are eventually combined; for example, the verb phrase "ride in" combines with the noun phrase "the car". These constructions ultimately develop into sentences, for example "I ride in the car."

Let us take three two-word combinations ("There car", "car broken", and "see car") and trace their development into the kernel sentences and the primitive transformations which characterize language construction development between ages two and five. First the child takes these two-word phrases and can expand them into the following basic constructions, i. e. "There the big car", "The car broken", and "See the car". When the child has reached the stage where he can generate "I see a car", "The car is broken", and "There is the big car", he has made kernel sentences out of his two-word combinations.

Thus the child demonstrates that he can take his two-word combinations and elaborate them by adding the expanders that are necessary to complete each type of sentence. To make "There is the big car", he has completed the noun phrase by adding the modifier (big) and the article (the) and has supplied the verb (is). In taking "Car broken" to "The car is broken", he has completed the noun phrase by adding the article (the) and the verb (is), both of which are essential to complete the sentence as we usually say it. In taking "See car" to "I see a car", he has added the noun or pronoun subject (I) missing from the original sentence, and has completed the noun phrase by adding the article (the). The child also expands by taking the two basic language forms he has at his disposal, i. e. the noun phrase and the verb phrase, and combines them together to make a complete sentence, e. g. "I see the big car". Here he has joined his two-word combination, "I see" with the noun phrase, "The big car."

As his computing space increases and is recognized (Menyuk, 1969), the child transforms these kernel sentences into other basic types of grammatical constructions. At this point the child is beginning to engage in primitive transformations of his language which are the precursors to later expansion of his grammatical system into its traditional and highly complex forms (Chomsky 1957, 1967). For example, "There is the car" easily evolves into the question form by substituting where for there, i. e. "Where is the car?" or through changing the word order, i. e. "Is the car there?" In this latter care, the actual words are the same. In these transformations, the child reorders the sequence of words within a sentence to convey different meanings.

It is typical clinical observation that children with language problems have difficulty in thus transforming the word order in a sentence to change the message. For instance, in observing the language formulation of the children in the research classroom, there were many instances where, by their inflectional pattern and gestures, it was evident that a question was being asked. However, the question was formulated on a primitive level and the children did not understand when to use the system for transforming the word order to put them into the appropriate sentence construction. These children had the idea of asking a question and the concept they wished to place in question form; however, they did not have, or could not use, the skills of sequencing the words in such a way that they were formulated properly. Such a child has the concept and labels to convey his idea (semantics) and yet is unable to incorporate this into efficient sentence structure (syntax).

The second sentence construction, "The car is broken" can easily be transformed either to make a negative statement "The car is not broken" or to make a compound noun phrase (conjunction) "The car and truck are broken". To form the conjunction transformation, the child not only has to combine two noun phrases and connect them with "and", but he has to make the appropriate verb tense change. This, too, is a difficult task for many psychoneurologically inefficient children. They tend to remain with the simple parallel construction "The car is broken, the truck is broken" and have difficulty combining these two thoughts into one, more-efficient sentence. It is at a point like this where the inefficiency of language formulation becomes most apparent in psychoneurologically inefficient children. They must use more language, constructed in simpler forms, in order to convey their thoughts. Their language then becomes very inefficient and appears to be extremely concrete. For instance, they may use five or six sentences to name the properties of a particular word instead of being able to string the properties together and connect them by "and". When enumerating a number of objects or people in a picture, their verbal construction is "I see a man, I see a cat, I see a sun", rather than "I see a man, a cat and a sun." This inefficiency in language becomes more and more evident as the child gets older and more complex language transformations are expected in order to handle the kinds of ideas the child wishes to convey.

Thus, it is easy to see that an understanding of how language formulation develops, as well as when, gives the teacher a good background for observing and stimulating children's language facility. Only by understanding overall developmental patterns can the teacher gear her language expectations appropriately to a specific group of children. Secondly, one child's atypical language patterns can only be observed properly by comparing these patterns with his overall level of language development.

Articulation Development

Review of the literature pertaining to articulation development in children indicates some discrepancies in the many studies reporting developmental norms or developmental sequences. In a publication by Gertrude Wyatt (1965), there is compilation of norms by Templin, Wellman and Poole. The following are the ages at which 75 percent of children tested correctly produced specific consonant sounds. These norms are gross indicators of when the teacher might expect these sounds to be produced correctly in all positions of words, i. e. initial, medial and final.

Sounds Produced	Age Correctly Produced
m, n, ng, p, f, h, w, y, k	3 - 3.5 years
b, d, g (in go), r, s, t, sh, ch	3.5 - 6.0
th (think), th (their) v, l, z (zoo), j, hw (where), zh (pleasure)	6 - 7.5

There are three factors involved in the production of consonant sounds; placement, manner of production, and voicing. Placement refers to points of contact between the articulators when a specific sound is produced, e. g. to produce /b/, the lips are brought into contact. To produce /f/, the teeth and the lower lip are brought into contact. To produce /th/, the tip of the tongue and the teeth are in contact with one another. To produce /t/, the tongue tip and the alveolar ridge (the ridge in back of the upper teeth) are brought into contact. To produce /k/, the back of the tongue and the (soft) palate are brought into contact with one another.

Manner of production refers to the way the air stream is modified when a specific sound is produced. To produce /p/, the air stream is actually stopped, built up and then released. To produce /m/, the air stream is directed through the nose rather than the mouth. For production of these two sounds, it may be noted that placement is the same, i. e., the lips are in contact, but the manner of production has changed, differentially modifying the air stream to produce different sounds. To produce /f/ and /v/, the air stream is not stopped but it is impeded which produces a friction type of sound. This is also true for the sounds /s/ and /z/, /sh/ and /zh/.

Voicing refers to whether or not vibration in the vocal folds accompanies the production of the sounds, e. g. /p/ and /b/ are similar in placement and manner of production but are differentiated by voicing. Thus, /p/ is not accompanied by vibrations of the vocal folds, whereas /b/ is accompanied by the vibration. If this differentiation is not clearly heard, one might feel it by placing ones fingers at the level of the larynx (or vocal folds), while producing /p/ and /b/. Similarly, /s/ and /z/ are differentiated by the element of voice, for they have the same placement and manner of production but /s/ is unvoiced and /z/ voiced.

It is difficult to make any wide-based generalizations about the types of substitutions that might be accepted within certain developmental norms. One must consider, however, that some sounds develop before others in connected speech. Therefore, the child has a limited repertoire from which to draw in substituting sounds. Generally, the following rules might be applied. Sound substitutions maintain their voiced or voiceless qualities in substitution, and a sound that is more easily articulated is substituted for one more difficult to produce. For example, /d/ would be substituted for /th/ (voiced), /b/ would be substituted for /z/, /p/ would be substituted for /g/, and /t/ would be substituted for /k/.

An atypical or unusual substitution does not follow the above rules. Such a substitution should be noted and the child's language skills explored. For example, /k/ and /g/ substituted for /t/ and /d/ respectively, and /s/ for /f/. Note here that the difficulty in placement has increased rather than decreased but the manner and voicing are consistent.

Many children are able to produce an approximation of a sound but are unable to produce it as accurately as they will in adult speech (distortions). In learning to produce the sounds, children go through successive approximations and, in doing so, frequently distort the sounds before precise articulation is achieved. This is particularly notable in production of the /s/ phoneme. Children frequently have the concept of how the sound is produced and where it occurs within words but do not have the motor ability for a precise articulation. One will note that there is frequently a discrepancy or inconsistency in the type of articulation for this particular phoneme. For example, the child may demonstrate good production at some times, for example in the word "sun" or "soup". However, when the sound is contained within the word rather than at the initial position, he may distort it somewhat. Children generally incorporate new sounds in their articulatory repertoire by learning to pronounce them first in the initial, then final and then medial positions. Thus, such a distortion would indicate that the child is just beginning to produce the sound and learning how to use it. This type of articulatory distortion would not warrant concern unless it persists beyond the age expected or it draws particular attention to his speech.

Thus an understanding of the sequence of articulation development gives the teacher a basis for determining the articulation levels in her class. More importantly, it allows the teacher to note any unusual or atypical articulation patterns which might indicate underlying language difficulties.

Chapter Two

THE ASSESSMENT AND STIMULATION OF LANGUAGE FUNCTION

Any teacher walking into a classroom for compensatory education is faced with a diversified group of youngsters who possess different abilities in all areas of learning - including communication skills. By virtue of the very nature of communication as an ongoing reciprocal process which permeates every interpersonal activity, these skills can and must be observed in a wide variety of settings within the classroom. All classroom activities reflect the varying language levels of the children within the classroom and "normal" kindergarten activities need not be greatly altered for the teacher to observe the language levels of her pupils and pick out those with specific language problems. This discussion will emphasize how communication difficulties reflect themselves within normal classroom activities rather than outlining specific diagnostic procedures for each individual child. These very same classroom activities, presented at the particular child's functional level, will enhance communication skills and, therefore, serve as a framework for teaching language facility.

How should a teacher approach a classroom of children to obtain a better understanding of their language communication and determine how to influence it during the course of the year? Most teachers approach this problem by presenting specific lessons, reading stories, teaching games, or activities at the piano. Further, the child is encouraged to express himself during "show and tell". While these activities are generally suitable for the kindergarten child, the teacher may be aware that children vary greatly in their ability to profit from or participate in various parts of this verbal experience. Occasionally the teacher may suggest that the mother take the child to the orthodontist, speech and language therapist, or psychologist if he is not talking or listening adequately. However, the teacher is sometimes unsure what she can do to meet the needs of such children in the classroom itself.

In any project serving deprived children, the numbers of children showing deviant language responses is great. Much of the literature on the effects of deprivation has focused on the language deviations of disadvantaged children. From our point of view, comments on their language function fall into two broad categories. First, it is well-accepted that disadvantaged children do not have the background of experience that middle class children do on the usefulness of language as a tool. Thus, they often ignore language or "freeze" in the language situation. Second, it is generally recognized that language development in disadvantaged children is on a more primitive level than their middle class counterparts. In our view, this stems partly from the lack of experience in using language and partly from the fact that there is a higher percentage of psychoneurologically inefficient youngsters in the disadvantaged group.

Careful observation and stimulation of language is an integral part of overall program for the disadvantaged child and particularly relevant for the psychoneurologically inefficient disadvantaged child. Thus, the following analysis of observing the overall level of language efficiency and the discussion of stimulating language efficiency in a sequential fashion is useful whether a child's language usage is primitive because of lack of experience or psychoneurological inefficiency or a combination thereof. Further, since the pace of the program is dependent on the children's rate of progress, it automatically adjusts to the severity of the child's difficulty. Particular attention to increasing the child's awareness of the usefulness of language as a tool is indicated in the discussion of language formulation in informal and formal situations.

In the present research classroom, three of the children had severe articulation problems, one of the children being almost unintelligible. Two other children did not speak at the beginning of the year and seemed to 'freeze' in language situations. In general, most of the children were disorganized in the way they used language, either to understand what the teacher was communicating or to express themselves in logical, sequential fashion. Thus, this group of children poses the problem of how the teacher can use the language that she presents and the language she expects from children in a way that will both clarify their skill levels and assist their growth and development.

The strategy taken by Meeting Street School therapists in the language area is a diagnostic and process - oriented approach. At the beginning of the year, the therapist makes an informal assessment of how the children comprehend and formulate language. This evaluation begins with a gross impression and proceeds to increasingly finer distinctions, as fine as necessary to fully understand each particular child's strengths and weaknesses. Such a process may take a couple of days for one child but might involve several months of observation and trial teaching with another.

From such initial observation, a teacher is also able to determine each child's functional level in language, how it differs from the other children, how he may respond to the kind of activities she plans to present. At this point, observation or diagnosis shades into an activity or education approach. The aim of the process-oriented curriculum is to understand the children's level of skill in order to provide appropriately designed activities to help them process information and be effective in the classroom. This kind of approach is best accomplished by employing the many formal and informal situations routinely utilized by the classroom teacher.

Secondly, the teacher is able to note those children who demonstrate atypical patterns of language functioning. She can then evaluate each child's language difficulties more intensively in order to individualize the program for him. Once his problem areas are clarified and the teacher understands how to modify her language activities, it is a relatively easy matter to individualize a program in language.

Thus assessment is a two-fold process. First, observe the group's overall level of language efficiency in order to program activities which are appropriate to the childrens' overall language comprehension and formulation ability. Second, note and more fully assess an individual child's atypical language patterns so that the program can be individualized to meet his needs.

ASSESSMENT OF CHILDREN'S LANGUAGE THROUGH KINDERGARTEN ACTIVITIES

From the moment a youngster arrives at school until he leaves each day, the teacher is presented with many opportunities to observe his ability to communicate. Let us consider the classroom activites as falling into one of two categories: the informal activities, such as social amenities and self-directed play, and the formal language situations. Each provides an opportunity for observation of language skills and suggests a particular means for influencing communication. We will discuss observation and teaching possibilities of each category separately.

To observe or stimulate a child's language skill, the teacher needs to understand the differing roles which language plays in formal and informal classroom situations. A child's ability to use language in these two situations may be quite different and may shed light on the child's particular difficulties. The major difference in these two language situations lies in the fact that the language exchanges are basically child-initiated in the informal situation and teacher-initiated in the formal situation. For this reason, the child's language ability often seems quite discrepant in these two situations, i. e., he may verbalize quite well when he can initiate the conversation but may fall apart when he has to organize himself to respond to teacher-initiated conversation. Further, while the children may appear to have learned a particular concept or skill in a formal language situation, the real test of the efficacy of this learning is whether they can recall and use it appropriately in informal situations.

Social Amenities Activities

The "social amenities" or conversational activities include the youngsters' arrival at school, snack time, and the brief period at the end of the school day. These situations are characterized by their relative informality and spontaneity. Since they utilize many language skills the child has repeatedly practiced outside the classroom, the child can draw on this experience to help him. During these times the teacher has the opportunity to make general observations regarding the youngster's overall ability to communicate in relaxed, verbally-stimulated exchanges. Thus the first observation she makes is whether he speaks in this situation, and if so, when he speaks. She may notice he speaks more freely under certain circumstances than in others. She also has the opportunity to make observations regarding his comprehension skills and his ability to formulate language. This usually begins with observations about his speech. Is his speech intelligible or not? If intelligible, is it always intelligible, sometimes intelligible , or intelligible for brief responses and unintelligible for lengthy responses? Analysis of the child's speech pattern added to observations of his sentence constructions indicate his language formulation ability. Further, it is quite common for a kindergarten child to enter the classroom and to be told to hang up his coat and hat in a specific place and take his seat. We assume that the child is perfectly capable of carrying out what appears to be a very simple request. This is an excellent opportunity to observe whether or not a youngster can comprehend and follow directions by the verbal cues alone.

Snack time affords the teacher an opportunity to make many observations of language behavior. This period of the day is often a familiar one for children because it is akin to similar situations they experience and, hopefully, feel comfortable in at home. Therefore, the teacher may have the opportunity to observe conversational speech in a fluid, relaxed situation. This situation may provide the closest reflection of the child's optimal conversational language. Thus, snack time provides the opportunity to evaluate how much of his previous experience the child is able to retain and formulate verbally. The teacher also has the opportunity to prime the children to perform within this situation. For example, a common question a teacher might normally ask to prompt language expression would be "What did you do at home last night? "Do you remember such and such an activity that we did yesterday?"

The child's abilities to retain and verbalize what he has experienced and learned can also be observed in the two short periods at the beginning and the end of the school day. Here the teacher encourages anticipation or recapitulation of daily activities. Such situations provide a unique opportunity to assess the child's ability to retain and verbalize his immediate daily experiences in sequence. Since an understanding and use of the sequence in which events occur in time is a very important academic precursor skill, observation and facilitation of the children in this area should be an important part of any preschool curriculum. It is particularly important for disadvantaged and/or psychoneurologically inefficient children because their skills in this area are characteristically poor.

Self-Directed Play Activities

Certain activities in the typical kindergarten day fall under the heading of self-directed play. These include playing house in the doll corner, block building, playing in the sand pile, and utilizing art materials such as clay and finger paints. These activities frequently stimulate children to engage in conversation with other children and to talk about the materials as they play.

In many classroom activities, conversation is often between the children and the teacher. However, self-directed activities often prompt conversation amongst the children. Here they learn their role in the communication process and discover the usefulness of language as a tool in this process. One of the most basic observations to be made is whether the child prefers to remain silent when given this opportunity or actually enjoys the opportunity to engage in conversation with his classmates and teacher. Does he use language to stimulate conversation with other children in the group for pleasure and to influence the course of the play with the materials?

Secondly, self-directed play activities allow the child to experiment with the use of language in thought and memory, i. e. verbal mediation. Does the child employ language in organizing himself? Does he talk about materials and think about their properties aloud? Does he talk about the things he is doing in some sequence, thereby aiding his memory for this sequence? In general, does the child use language to elaborate his environment, understand it, and monitor his behavior?

In self-directed play activities, communication is not necessarily demanded of a child through verbal interaction but occurs spontaneously in response to the many non-verbal cues provided by the materials and situations in which the child finds himself. The teacher has the opportunity to make observations regarding the child's overall language formulation during these situations and contrast it with situations where language responses are verbally stimulated-- the social amenities and formal language situations. Discrepancies here are often important in understanding various children's language capacities. For instance, Dominic was a child in the research class who initially did not speak. The first situation in which he used language was in self-directed play. As he felt more comfortable in this situation, he was gradually able to respond, even though primitively, in the social amenities and finally in the formal input-output, question-response situations.

Similarly, many of the children in the research class used language to help them function in self-directed play activities. However, one or two were so inadequate in organizing themselves to perform motor acts in sequence that they had to verbalize every act aloud as they did it in order to keep themselves on the track. While this is an adaptive technique, the hyper-active and continuous nature of this verbalization suggested these were extremely disorganized children, and indicated the brittleness of their overall information processing.

Formal Language Lessons

Some part of each kindergarten day is devoted to activities which may be considered formal, i. e. story telling, music and record period, as well as specific lessons geared to developing language concepts such as colors, prepositions, etc. During these sessions the quantity and quality of the child's language is directly related to the activity presented. The teacher can gear these situations to suit any purpose she has, whether it be tapping certain areas of language skill for observation and diagnostic purposes or stimulating development of particular language skills. In contrast to the informal situations, the formal language situation more directly illuminates each child's particular skills or weaknesses. In these situations, the response to language is dictated by the activity, and only specific responses are appropriate. The child has little leeway for circumventing his language weakness when his responses are circumscribed.

To use the formal language situations for diagnostic purposes or teaching specific skills, the teacher needs to understand how to construct activities so that they 'zero in' on a particular language skill. The discussion of teaching activities in the second half of this chapter provides the basis for the teacher to so analyze or design her own activities. The formal language situation is also used for teaching specific content--i. e., vocabulary and concepts. The test of whether such teaching has been effective, however, is discovered in the informal situations. Is his learning functional so that he can recall and use it appropriately in informal situations?

Diagnostically, the formal situation has a unique function. It serves as the bridge between assessment and teaching. After the teacher observes the strengths and weaknesses of the children in her group, she must also determine which teaching strategies will enhance their language development. To do this, she can try out alternate strategies and pick the most effective one(s). Then she can apply these in both formal and informal activities.

Observing Atypical Language Patterns in the Classroom

Most situations which involve interpersonal relationships necessitate verbal communication. Children are exposed to and experiment with various aspects of language from the moment they enter the classroom until the time they leave. The teacher's job is to understand the level of each child's language skill within the classroom setting so that she may take full advantage of each classroom situation in making language a more functional tool for the children.

Observation of the child's degree of language facility is easily accomplished in the classroom; one looks at the grossest problem areas first and only makes finer differentiations if necessary. Many diagnostic systems suggest that every child receive a detailed analysis of all parts of the language system, but do not provide a framework for interpreting the child's performance.

The problem of understanding the child who does not talk graphically demonstrates all the difficulties one might encounter in assessing children's language efficiency. Lack of speech can reflect any one or a combination of the following difficulties: deafness or hearing loss, gross anatomical or structural oral musculature problems, discomfort or unwillingness to use language, or massive difficulties in the comprehension and/or formulation of language.

The behavior of the child with a gross hearing disturbance is usually observable within the classroom setting. Any child who is suspected of having a hearing problem should be immediately referred for audiological screening or evaluation.

The second major disturbance that one must check in a child who does not speak is the possibility of a severe motor difficulty which prevents speech. If a child drools excessively, has a marked facial asymmetry or other anomaly which suggests structural or anatomical deficiency, this should be also evaluated by a professional medical or speech and language evaluation.

Third, the disadvantaged or emotionally upset youngster is often initially unwilling to speak because he is fearful or unsure of himself in this new environment. Generally he will demonstrate more willingness to produce speech given time, opportunity and a secure and warm emotional environment. Further, though language is usually the most sensitive area to this type of difficulty, such withdrawal symptoms are usually observed in most classroom activities. Persistence of severe forms of these symptoms calls for professional evaluation by psychologist or psychiatrist.

If the above three possibilities are not considered extensive enough to completely explain the lack of speech, then one can suspect that the child has a severe language disturbance. Such a language problem should also be professionally evaluated. However, the principles a professional language therapist uses to evaluate the child's ability to comprehend and formulate language can provide a basis for understanding children with less severe language disturbances. The following includes a discussion of these principles in two sections: language formulation efficiency and language comprehension efficiency.

OBSERVING LANGUAGE FORMULATION EFFICIENCY[1]

Most classroom activities are dependent upon the children's ability to verbalize spontaneously or respond with language or demonstrate their concept of a given activity through speech. That a child comes to the classroom equipped with all these basic language formulation tools so that he can verbally participate in activities, is a fairly common assumption for most teachers to make. The logical nature of this assumption is easy to understand for, between the ages of four and five (the time at which most children begin their formal public school education), speech and language have usually developed to a fairly sophisticated level. However, when the classroom teacher actually faces a class of deprived or inefficient children, the inappropriateness of this assumption is readily apparent.

One of the prime goals of any preschool is to enhance the children's use of creative and imaginative language and develop higher concepts through learning category names and functions of food, animals, furniture, numbers, etc. For many children this goal is relatively easy to attain. However, children with language difficulties may have missed earlier language formulation stages which, in turn, prevents them from succeeding at these higher levels. Within the classroom setting, the teacher has many opportunities for observing the children's level of language formulation. By noting the quantity and quality of the speech, the teacher can gear her own expressive language to their level and plan specific language-oriented activities which will enhance overall language ability as well as improve weak and deficient areas.

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[1] The material in the observation sections is, in part, based on Hainsworth, P.K. and Siqueland, M.S., Early Identification of Children With Learning Disabilities: The Meeting Street School Screening Test.

Just as a lack of speech is a warning signal that a child has a serious language disturbance of some kind, the observation that a child's speech and language performance is different from what she expects is one of the teacher's first cues that she must examine the child's language skills with some care. Poorly articulated speech or impoverished and scanty verbalization may be symptomatic of underlying difficulties in understanding or formulating language. A second and often neglected set of alerting signs to a language difficulty is found in the child's behavioral reactions. Often the teacher's first cue that the child has a language difficulty may come from her observation that the child withdraws or misbehaves when language material is introduced into the classroom environment.

When the teacher notes this differential behavioral reaction or speech and language which is different from what she expects, she must begin observing language performance with some care. Difficulty in language formulation occurs as a result of one of the four major reasons discussed above. First, some children enter a new situation with such hesitancy, fear, inexperience or negative feeling that they prefer to remain silent, at least initially. If the child continues to demonstrate this behavior but does so only in those situations which have a heavy language emplasis, this may indicate that language difficulties are prompting this behavioral reaction. On the other hand, if the symptoms persist in response to all classroom activities, the teacher would look further into the child's cultural background or interpersonal adjustment.

Secondly, scanty or atypical speech can be the result of a mild to moderate physical difficulty related to the oral speech mechanism. Children who appear to have dental problems, tongue difficulties or other problems related to the vocal equipment and reflected in unusually hoarse or nasal voice quality, require specific diagnostic work-ups and therapy from a speech and language therapist. However, even these children benefit greatly from certain types of speech and language activities within the classroom. It is important that the teacher recognize some of the symptomotology which suggests this particular type of speech problem and work with the child under the direction of a speech and language therapist. In order to recognize which symptomotology suggests this difficulty, the teacher must understand how to analyze the child's articulation pattern in some detail.

Thirdly, underlying difficulties in hearing will also produce unusual speech and language processes in children. The child who has a hearing impairment of a mild to moderate degree will likely exhibit certain characteristic articulation patterns. For example, a difficulty with fricative sounds may indicate a high frequency hearing deficit. Unless the hearing loss is moderate to severe, these children do not usually demonstrate difficulties in language construction; rather, their symptomotology is reflected in faulty articulation and behavioral reaction to spoken language. Again, analysis of the articulation pattern and contrasting it with the child's language construction ability helps clarify this situation.

A fourth group of children with unusual language patterns reflect language formulation problems. They usually speak, but not the way most kindergarten youngsters speak. Their language may be scanty, scrambled, difficulty to understand, bizarre in terms of word order, characterized by misuse of inappropriate use of words and frequent grammatical errors. The rest of this discussion will be confined to an analysis of these language formulation difficulties.

Formulation problems in language can result from two basic causes. First, a breakdown in comprehension of language can produce the above difficulties. If the child does not comprehend language, he cannot store enough language material (memory) to draw on when he attempts to express himself verbally. The effects of a language comprehension problem can be seen in the child's attempts to construct language to express himself. His language construction may be scanty and imprecise, characterised by inappropriate use of words and language responses that are tangential to the verbal input. Another clue to a language comprehension versus a language formulation basis for the child's language problem is found in his differential response to the informal and formal language situations in the classroom. This emphasizes the importance of observing the child's language efficiency in different types of language situations.

If the child demonstrates that he comprehends language fully but is still unable to formulate and express his thoughts in proper language construction and articulation patterns, the problem is likely to have its basis in the language formulation area itself. Thus, a thorough analysis of the child's skill in language formulation leads the teacher to a better understanding of the child's total language processing ability in both comprehension and formulation.

The classroom teacher has two goals in mind in looking at the children's overall language ability. The first is to determine the group's level of functioning in both language comprehension and language formulation, so that she may gear her lessons appropriately to the children's general level of understanding and make her demands for language formulation within their capabilities. Second, she wishes to find those children in her classroom who have particular language deficits and understand these more fully so that she may differentially program her lessons for these children.

To do this the teacher must assess each child's level of language formulation and note his particular difficulties in the informal and formal situations described above. Each of these activity categories allows for a different observation emphasis with respect to language formulation. The social amenities situation calls for the child to formulate language in the situation in which the child initiates the verbal interchange. The self-directed play activities stimulate language formulation in response to non-verbal cues. The formal language situation requires the child to formulate language in a question and response format where specific responses are dictated by teacher-initiated verbal input and, thus, where a specific language production is expected.

In each of these situations, the teacher can observe the child's overall response, his language constructions, and his articulation patterns. To realistically understand his overall language formulation ability, she must examine his efficiency in the three situations. After observing the child for a period of time and checking his language performance with the sequence of language development presented in Chapter One, the teacher will have a clearer picture of the child's overall language formulation ability. Further, if a discrepancy is found in a child's performance in a different situation, it often illuminates the child's particular difficulty. For example, if the child constructs language well in self-directed play, inconsistently in the social amenities situations, and poorly in formal question-answer situations, this may indicate that his language formulation difficulty results from a language comprehension problem. On the other hand, if his language construction is generally poor but improves with the specific content and teacher prompts given in the formal language situation, this child's difficulty probaby lies in the language formulation area. Thus the importance of observing language performance in the different situations is obvious.

A question of what the teacher should observe in each of these situations then becomes primary. Refering back to the theoretical framework of information processing, in Chapter One, language formulation can be divided into three main areas. The first involves cognitive processes; i. e., how much information does the child already have stored from his past experience that he can draw on for expression and how effectively can he retrieve this. This is reflected in his ability to find an appropriate set to draw on information for use in expressing himself and in his ability to use more abstract concepts in communicating his ideas. The second major area involves how the child expresses these thoughts in words and sentences. This "language construction" involves word selection, the ordering of words into sentence form, and the grammatical forms in which he expresses these. The third major area involves the child's articulation pattern. There are many different types of articulation patterns and they, in turn, reflect different types of language processing difficulties. The following framework for observing and stimulating language formulation will concentrate on the last two areas, language construction and articulation pattern.

Language Construction

Observing the child's language construction facility involves the teacher analyzing the quantity as well as the quality of the child's language production. The child with construction difficulties may limit his use of language to single words or to two or three word phrases; if he is not pressed, this is often the mode in which he prefers to speak. His language may tend to be string of nouns with spaces between. He may depend upon gestures and facial expressions to convey his thoughts. When he does try to express himself in words, the order in which the thoughts occur may be out of sequence: "Go home Daddy," rather than "Daddy go home" (which has a very different meaning). When urged to give longer utterances, his language may be a string of simple sentences or disjointed phrases, stripped of modifying clauses or conjunctions. He may confine himself to the present tense in verb usage and become confused by rules of pluralization, possessives and other prefixes and suffixes.

Other language construction difficulties indicate different language formulation problems. Some children are unable to find the appropriate word to express their thoughts and may use any number of mannerisms to cover this up. For instance, the child may be talking and suddenly stop short, fumble for the word, wave his hands, turn around and walk away. If he struggles long enough, he may come up with a word that is similar to, but not exactly, the one he wanted to use (an associative response). For instance, when attempting to say "Sit on the chair" he may say "sit on the table." Another child may get around his difficulty in finding a word by using many extra words to get across a simple point (circumlocution). This child keeps talking until the word comes to him. For instance "Sit on that thing over there, the thing over there with the legs and back, that thing you sit on." Such a child is often greatly relieved when a teacher provides the appropriate word 'chair' for him and usually recognizes it immediately. This child often responds to such prompts and memory aids that the teacher can provide.

On the other hand, if the child's inadequate language construction is related to a difficulty in language comprehension, his language construction may seem bizarre and inappropriate because he has misunderstood the verbal input. His language construction may be inappropriate, tangential or associative to the original language input. However, if the teacher attempts to work back from the child's language construction to how he may have misinterpreted the incoming information, she may have a clue as to the type of language comprehension problems he displays.

Another language construction difficulty is the scrambling of the order of words in a sentence. For instance, the child might construct a sentence such as "Not me going to tell you" for "I am not going to tell you". "I go to the store car" or "In the box put bell" are further examples. The meaning or idea in these sentences is not destroyed by the misconstruction; however, the ordering of the words is imprecise for conveying meaning and indicates that the child does not understand the linguistic rules by which words are combined to make a sentence.

Difficulties in grammatical form and length and complexity of the utterance are yet another symptom of a language formulation problem. These are reflected in primitive speech patterns. Telegraphic speech is a common example of this kind of language difficulty. Here the child speaks in primitive sentences typical of an 18 month to two year old child, e. g. "Me go car". Essentially, this is a string of nouns and verbs without any connecting or elaborative words. Such a child has not learned to expand and call up the linguistic forms in which complex sentences are usually constructed and therefore conveys his meaning with the least number of words possible. When this symptom persists beyond a two year level, it is indicative of a severe difficulty in language processing.

The other form that primitive speech can take is a child's inability to form plurals or to change the tenses of verbs appropriately. Even though the idea and the content he is expressing may be plural, past or future, he still expresses it in the present tense and singular form. Similarly, primitive use of pronouns is also indicative of this problem. The persistance of me instead of I, him and her instead of he and she, and little use of "it" and "they" are indicative of the same problem at a slightly higher level. (A special note of caution should be entered when discussing pronounal disturbances. If this is the only symptom of primitive language development, it may well not indicate a language processing problem but rather reflect dialect and cultural patterns or emotional problems as they relate to the child's ability to see himself in relationship to others.)

Children's language errors can only be evaluated in the context of their overall language ability. This again emphasizes the two purposes of observation--determining the overall language functioning in comprehension and formulation as well as noting and investigating atypical language patterns. For example, in order to evaluate whether a particular child's difficulty in finding a word reflects language processing problems, she must be aware of the level of vocabulary that he has at his command. If he demonstrates the circumolcations and associative response patterns for words which she has heard him use at other times with facility, this likely indicates difficulty in the retrieval of words. On the other hand, if a child demonstrates these when he is trying to think of a word which is not in his current vocabulary or to express a concept or idea far above his general level of language skill, then this, of course, would not be indicative of any word finding difficulty but rather of a child stretching his vocabulary capacity. For instance, it would be unusual for a child of four or five to have difficulty retrieving the word "hat" and circumlocuting by saying "The thing I put on my head" or "The thing that Daddy wears." On the other hand, if he has difficulty calling up a particular day of the week, or other difficult concept, a word finding difficulty would not be suspected. Similarly, the child who scrambles sentence word order or exhibits an unusual grammatical construction when attempting to construct language far above his usual functioning would not necessarily have a language formulation difficulty.

Articulation Pattern

Observing the quality of the child's articulation patterns often provides a teacher with considerable information about this child's language problem. In order to understand which type of inaccurate speech is indicative of underlying language inefficiency and which is not, the teacher must understand the normal developmental sequence in articulation skills. For instance, speech substitutions such as W for R and T for K or difficulty pronouncing certain sounds such as TH, SH, CH are quite normal for the five or six year old child and would not indicate underlying language difficulty. Further, baby talk may be found in the infantile child who is dependent or socially immature. Thus, the teacher must understand the kind of intelligibility error the child makes to know whether a child's misarticulation is baby talk or developmentally common omissions and substitutions or an atypical error suggesting a language deficit.

Several atypical articulation error patterns can be described. The child who demonstrates distortions or substitutions of vowels has a serious language processing difficulty, probably related to the intake of auditory information. Similarly, the child who enunciates only the first syllable of each word is highly suspect. Sometimes, one finds a child who talks whole sentences comprised of the first syllable of each word. Such a pattern may suggest a difficulty retrieving the sound pattern from memory storage. At a lesser level of this problem, some children scramble the order of the syllables or phonemes in a word because they cannot remember. Some common examples of such scramblings are aminal and ephelant; other less common ones are hopsicle for hospital, puc for cup. All the sounds are there; however, they are in incorrect sequence.

Certain other types of articulation errors reflect underlying confusion in language processing. One of the most indicative signs is the child whose speech becomes more slushy and inaccurate as he tries to talk in longer sentences or explain a complex idea. As long as he confines himself to single words or two word phrases, he is perhaps readily understandable. However, when he tries to string five or six words or two or three thoughts together, his articulation may break down such that the sounds in the words are scrambled or left out. This is an example of overloading; when a child becomes overloaded, precision in all language processes may suffer. Not only does his actual speech output become less intelligible, but often his words become scrambled and the ideas trip over each and are poorly formulated.

Another pattern that is often confusing to the listener is the child who differs in intelligibility depending upon what he is saying.

Many children with difficulties in language processing appear far more intelligible on rote or automatic phrases, i.e. "Hello, how are you?" than in constructing new language responses in conversation. In rote phrases, the sequence of the sounds is more easily retrieved for reproduction by the child because he has had more practice in establishing the sound patterns and their motor equivalents.

Thus, careful observation of the type of articulation and language construction difficulty the child exhibits often provides a cue to the reasons for his language formulation problem. However, atypical patterns can only be evaluated by contrasting them with the child's overall language development. Thus, a careful understanding of the sequence of developmental steps in language, plus a discussion of atypical language patterns, provides the teacher with the background material necessary to determine the child's overall functional level and note specific language formulation problems. (See Chapter One for a discussion of the sequence of sentence and articulation development.)

Observing Formulation in Informal and Formal Situations.

The teacher's assessment of pupil language function is a two-fold process. First she must determine the child's overall level of efficiency in language formulation reflected in his language construction and articulation. To do this she looks at these skills in both the formal and informal situation. In this way she can obtain a realistic picture of his overall ability to function in different types of language environments. She can then plan her program of language activities at a level which the group as a whole can handle and yet be realistically challenged.

Secondly, the teacher can note if and where any unusual or atypical language patterns occur. Then she can begin the process of looking more specifically at each child's particular areas of difficulty to understand their nature and find ways that the language environment can be used to aid these particular deficits. In addition to providing different types of language environments in which language construction and articulation patterns can be observed, each of the informal and formal situations presents a unique kind of opportunity to observe specific aspects of language formulation. Let us take each of these situations and discuss them individually.

Informal Situations. The informal situation provides a good measure of the child's willingness to use speech as well as an assessment of his general dependence upon language as a tool. Language formulation is generally child-initiated in the verbal interchange of the social amenities situations and in the response to non-verbal cues in self-directed play. Through observing the child's language in these two situations, the teacher obtains an overall picture of the child's proclivity to use language as a tool and his willingness to communicate verbally with his environment.

In the social amenities situation, the teacher observes whether the child is willing to use language in a relatively natural communication environment or whether he tends to avoid speaking situations. He may so avoid by clamming up, or by reverting to infantile or distracting behavior such as seeking out alternate play materials or otherwise demonstrating that he is uncomfortable and inadequate in such situations. Contrasting his willingness to perform in this child-initiated and verbally stimulated situation with his willingness to perform in the child-initiated and non-verbally stimulated play situation or the teacher-initiated formal language situation may shed light on the nature of his communication problem. Both informal situations tap a unique type of language within the child. The social amenities situation is a familiar one to the child. Hopefully he has been engaging in conversation for much of his life and many of the language skills that are required in this situation have been well-practiced. Many children with language formulation difficulties do far better in this situation than in any other because of their familiarity, and past experience. They have had the opportunity to develop a number of rotely learned mechanisms for handling the social amenities situation and therefore their ability may exceed that in other language situations. Teachers often ask how a particular child can have a language problem when he is able to handle social conversation. This is because of the amount of practice that is involved and the fact that the child can direct the content to topics that he has already discussed many times before.

The self-directed play situation taps other uses of language. It provides opportunities to observe if and how the child uses language to mediate his thought processes and organize himself. Further, the verbalizations during such activities often give some indication as to the conceptual level of the child. Some children function at a very concrete representational level. Others who function at a higher conceptual level are able to utilize language in imaginative and creative ways to organize their play and learning activities. For example, a child playing in the doll corner who is functioning at a concrete representational level might speak only about putting the baby in bed, feeding the baby and taking the baby for a walk. A child who is able to utilize language at higher conceptual levels might talk about playing house, i. e. Daddy going to work or Mommy taking care of the children--basically the same situation viewed at different conceptual levels.

In addition, the child's use of language to monitor his skills and activities can also be assessed in the self-directed play situation. Is the child able to verbalize what he is doing, thereby aiding his memory for recalling this action at another appropriate time? Can he verbally describe either what he has done or how he is going to plan his self-directed play? The next issue becomes one of whether the child uses verbal mediation efficiently. Verbal mediation can assist a child in organizing himself to responding to his environment. However, many psychoneurologically inefficient children are as hyperactive and perseverative in their attempts to use verbal mediation as they are in other activities. Thus the verbal mediation may become distracting if they are not taught to use it appropriately and efficiently.

Formal Situations. In general, children who have difficulty expressing themselves verbally demonstrate their problems graphically in formal language situations. Frequently these children are able to compensate to some degree for their difficulties in informal situations, but become extremely uneasy and demonstrate their failure in the formal situations where specific language formulations are demanded. These are the children who resist by never offering to respond and avoiding being called upon by the teacher. Though they frequently know the answers sought, they may be unable to translate this message into the appropriate language form. These children also demonstrate behavior which is a reaction to their language formulation difficulties. They may fidgit, whisper, prod other children, fail to pay attention, and in any and every way attempt to avoid these situations in which they feel they will be liable to failure.

In addition to assessing the child's willingness or ability to formulate language in the question-answer format of the formal language situation, the teacher can use this situation to specifically observe any particular skill area that she wishes. This situation can be made very similar to the traditional individual diagnostic evaluation where the examiner presents a specific type of material to the child for response and, thus, can observe a specific area of function. In this situation, the teacher can present specific language construction and articulation problems to the child and observe his skill. It is also here that she can further evaluate atypical patterns more completely. For this, she must use the extensive information provided in Chapter One on language retrieval and construction and articulation development, and the next section on teaching.

To use formal language activities diagnostically, the teacher designs them to call for a specific language skill, i.e. naming of objects or categories, expression of action verbs, use of compound sentences, etc. She can then observe the child's facility in each of these specific language activities, plot his skills and performance developmentally, and note any atypical patterns. Further, certain formal language activities demand recitation of rote and automatically learned verbal patterns, i.e., singing songs or reciting nursery rhymes. It is interesting to contrast a child's success at this type of activity with his spontaneous language performance. Children who have difficulty formulating language on their own often do quite well with these rotely learned verbal patterns; these are the same children who do better with the social amenities situation where automatic verbal patterns can compensate for a language formulation difficulty. For other children, however, the converse situation is true and leads the teacher to suspect a memory or sequencing problem as opposed to a formulation difficulty.

More importantly, the formal situation provides the transition between diagnosis and teaching. Although it is extremely important to understand specifically a child's problem and its nature, it is equally important to ascertain which teaching technique best facilitates his development in this area. It is the implementation of these teaching techniques individually or to a group which allows the teacher to build levels of skill. Thus she can explore these in the formal language situation, discover which teaching techniques are effective and employ these in both informal and formal situations to help children function more effectively.

Thus the teacher must evaluate what facilitates language formulation skill in order to plan an appropriate program for a child. For instance, is his language formulation ability aided by visual material provided by the teacher which may trigger an appropriate verbal response, or is his verbal response enhanced by certain verbal markers offered by the teacher?

For example, if the teacher provides the set or category in which a certain name is found, is the child then able to produce the particular label? If a question as to the function of a particular object is given, can the child then find the particular label or does the verbal marker have to be on a concrete level, i. e. another similar noun, before the label can be elicited from the youngster (see Teaching section for further discussion of verbal prompting).

OBSERVING LANGUAGE COMPREHENSION EFFICIENCY

A careful evaluation of language formulation difficulties may lead the teacher to suspect that there is a language comprehension difficulty underlying the child's unusual language constructions or atypical articulation patterns. For example, two children in the research group, Eddie and Barbara, showed much better language formulation in the self-directed play situation than they did in the formal language or the verbally-prompted social amenities situations. The fact that they were able to demonstrate considerably better language formulation in response to such child-initiated, non-verbal activities rather than to specific verbal input suggested that their language problem lay more in the comprehension of language than it did in language formulation. Thus, the child's language comprehension ability must also be carefully observed if the teacher is to fully understand children's overall language functioning and/or note atypical patterns. There are many situations in which a teacher can observe symptoms which would suggest that there is a problem in understanding language. Such exploration and understanding of the children's skill provides the basis for programming lessons appropriately to match their level of comprehension and to help them learn to function with greater ease and facility in comprehending language.

For the purpose of classroom evaluation, three of the above four major etiological categories affect language comprehension. First, is the child unable to hear at all or unable to hear adequately to comprehend speech and language? Second, is he too shy and inexperienced or emotionally pre-occupied to participate in communication and therefore shuts out language? Third, does he have a mechanical language processing difficulty? Again, it is this latter problem area which will be delineated further.

Referring to the Framework of Language Processing presented in Chapter One, a child may have a problem in comprehending language because of difficulties in one or a combination of three major areas of language processing. The first is an inability to listen or attend to verbal material (orientation). This may take one of the following forms: difficulties selecting relevant sounds to which to listen, excessive distractibility during verbal language presentation, or inability to concentrate on language for a sufficient length of time. The second problem area may be understanding the language that is received (intake and integration). The most common symptom of this is typified by the child who has difficulty following specific directions or several directions given in sequence, a task he is called upon to perform frequently in the course of a day. The third area that interferes with language comprehension is difficulty in appropriately sorting, categorizing and storing verbal experiences (cognitive ability and long term memory).

We will look in some detail at the first two--the problem of auditory attention and discrimination, and the understanding of verbal materials in sequence. The third area is best understood through discussion of the child's language formulation because it is in the retrieval of appropriately stored experiences to express ideas that these cognitive difficulties manifest themselves.

As in observing language formulation, the teacher needs to observe the overall level of language efficiency comprehension of her children individually and in a group so that she may appropriately gear the language she presents to the class at a level they can understand and act upon, and yet one which realistically challenges their comprehension skills. To do this she must observe their comprehension ability in informal and formal situations, with particular attention to the areas of auditory attention and discrimination and the understanding of verbal material in sequence.

The typical kindergarten classroom may present severe language comprehension challenges to an inefficient youngster. The teacher gives many five or six part directions to children and generally speaks in elaborated paragraph form. For example, a teacher often greets the pupils in the morning and asks them to hang up their coats and hat in the appropriate spot, find their seats, and take out their crayons, scissors and paper. This is a logical and meaningful sequence of events and yet, in terms of language performance, demands that the child be able to maintain his attention throughout this entire message, understand the language level at which the directions are presented, and retain the message in its appropriate order. For children with specific difficulties in language comprehension, this becomes an extremely difficult task.

As in the formulation area, the teacher will immediately get two kinds of cues from the children that her language is above their comprehension level: their behavioral reaction and their specific language and non-language performance.

Many children adopt behavioral mannerisms in response to their inability to retain or understand verbal directions. The child who misbehaves, wiggles or disrupts the class when language is introduced may well be the child who does not understand complex and lengthy verbal directions. Other children will manifest withdrawn, crying and passive or daydreaming behavior to escape from the incoming language which they cannot handle. Such behavior is often most apparent during Story Time or other activities which involve listening to masses of verbal material. These children may act as a constant source of annoyance and disruption to both teacher and fellow pupils because of their continued efforts to sabotage such activities. When a teacher sees disruptive behavior in a child she must immediately look at those situations which elicit the behavior. In some children, she will find this happens constantly and with no seeming relation to the type of activity presented. For other children she will discover that it is in response to verbal directions specifically.

The second cue the teacher will note is that the child responds imprecisely to verbal directions. Here, she may see several types of atypical patterns which indicate difficulties in auditory attention and discrimination or understanding verbal material in sequence.

Auditory Attention and Discrimination.

The first type of error the teacher might note would be one indicating poor attention for incoming auditory material. For instance, many children do not have sufficient attention to concentrate on long verbal instructions or stories. Often a child's response to long directions will be unusual or inappropriate because he attends to and thus hears only a part of what was said. Such a child may partially complete a task and his error reflects the fact that he has heard, understood and retained only certain sections of the verbal direction (usually the last, but sometimes the first, part).

Thus, the teacher needs to observe how long a child can tolerate auditory material. This is reflected in his ability to focus during any auditory input and the length of time he is able to do this. An estimate of the group's level allows the teacher to make her own verbalization appropriate. Further,she may observe the following unusual patterns which indicate problems in auditory attention. Is the child easily distracted by interuptions and background noises or can he maintain his concentration on the primary source of auditory information? Is there a lot of extraneous motor movement of hyperactivity involved when he is trying to listen to language material? Does he constantly avoid the listening process by disruptive behavior, asking questions, or using constant verbalization?

Secondly, the teacher may note that a child has difficulty following a direction because he has misinterpreted a particular word and is responding as though he heard a similar sounding word. For instance, the teacher says "Go get the blocks" and he returns with the box. She says "Go to the chair" and he arrives at the stairs, etc. Such performance suggests that the child has a difficulty in auditory discrimination; that is, he is imprecise in interpreting the phonetic elements of words. These atypical responses, plus observation of the child's length of concentration and attention, provide the teacher with an overview of the child's functional level of auditory attention and discrimination.

Understanding Verbal Material in Sequence.

In addition to difficulty in discriminating the phonetic element in words, the child may become confused with the sequence of the words in a verbal direction or the sequence of several directions. Certain responses to verbal directions will give the teacher the cue that it is in the sequential aspect that the child's comprehension is breaking down. Understanding verbal material in sequence is a complex task with involves: first, the ability to understand the language content of any single unit or direction and, second, the ability to maintain the sequence or order in which the directions have been given.

The child's abiltiy to understand the language itself is often a crucial difficulty. Some children seem to respond only to the nouns or concrete objects in a direction and are unable to assimilate the connecting words. For example, the instruction "Put the box on the chair," may end up with the child sitting in the chair and holding the box. This child may only have understood the words 'chair' and 'box' and guessed what he was to do with the two things. Such children's understanding of language is limited to simple noun-verb phrases; they often cannot understand prepositions, conjunctions, directional concepts, or modifiers such as adjectives or adverbs. Thus if told to "Go get the large red ball," he may come back with a ball but not the large red one. If told to "Put something under the table," he may put it on the table because he does not understand the preposition involved.

Secondly, the child may understand the language involved in a unitary direction but may have difficulty ordering, sorting and keeping track of this information. Such a child may respond to one command, even if it is fairly long, but begins to break down when he must understand two or three directions and maintain the sequence in which these directions were given. For example, the direction "Go over and get the red book that we use every day in our story time" is fairly long but involves a single idea of getting the red book. However a direction with fewer words, "Go get your chair, take it to the record player, and sit down" may result in a bizarre series of events. First of all the child may get the sequence out of order so he is sitting down in his chair where it was or has turned on the record player and gone back to sit in his chair, etc. A child who is perplexed by the complexity of the sequence may do the wrong thing, stop in the middle, or look around hoping to find out from others what is expected. He may also become involved in using what he understands for his own purposes, i. e. running around with his chair, or he may become immobile and refuse to participate. This type of child may also go to great lengths to avoid incoming language by becoming very talkative himself or otherwise disrupting the situation.

Children with difficulty in maintaining the sequence or order of language information also demonstrate typical deficits in learning certain concepts, particularly rote sequences such as number progressions, time concepts or the sequence of spatial cues in activities carried-on during the day. These children often seem out of step in class because they do not absorb the simple progression of activities and therefore cannot anticipate, as most children can, when to make the transition between one activity and another. They may become upset and anxious when an activity changes, because they have difficulty learning simple time sequences. Other inefficient children are bright enough to learn some of the rote verbal patterns such as counting, but are unable to use these sequences in any meaningful way. For example, they don't seem to understand that the order corresponds to the amount in numbers:

thus 8 comes after 5 because 8 is more than 5, or numbers increase as you add things to a pile and decrease as you take things away. Teachers often observe these difficulties with time, quantity, space, size or directional concepts in children with psychoneurological inefficiency.

As in observing language formulation difficulties, observing atypical patterns in language comprehension can only be evaluated in the context of the child's overall level of language development. Thus the teacher must have a clear understanding the sequence of developmental steps so that she may put her observations of atypical language comprehension in to perspective. Chapter One presents the discussion of the sequence of language development in some detail. This provides the material necessary to determine the child's overall functional level and against which to evaluate any atypical patterns that might be seen.

Observing Comprehension in Informal and Formal Situations

In order for the teacher to determine the children's overall level of efficiency in language comprehension, she must look at these skills in both the informal and formal situation. This provides her with a realistic picture of their overall ability to understand language in different language environments, and allows her to plan her program at the level which realistically challenges the group's comprehension skills.

Informal Situations. Contrasting performance in the social amenities situation, where there is considerable verbalization, with the self-directed play situation, where no language understanding is necessarily involved, may provide a cue to the child with a language comprehension difficulty. If the child appears considerably more comfortable in self-directed play than with social amenities, it may well indicate that his problems lie in the area of language comprehension.

Contrasting the child's response between informal and formal language situations may also provide cues to the child's language comprehension facility. Less precision of understanding is required of the child in the informal language situation in which he may be able to get by with only partially understanding the verbal material. The intelligent or adaptive child often uses the cues provided by the other children in order to guide his behavior appropriately. Thus while behavioral reactions may or may not be noted in informal situations, they may be considerably exaggerated when the child is faced with the precision of language comprehension involved in formal language activities.

Formal Situation. Children who have difficulty comprehending language readily demonstrate their problems in the formal language situation. When precision of response to teacher verbalization is demanded, the children's difficulty in understanding verbal directions become obvious. Here, too, the behavioral reactions become intensified. During Story Time or listening to records or specific concept development activities, they may become hyperactive or demonstrate anxious mannerisms. Some run around the room, fidgit, hit other children, or sometimes talk hyperactively in order to disrupt the incoming language which they are unable to handle. Others become withdrawn, shy, and cry or otherwise retreat from the language situation. Such behavioral reactions alert the teacher to the possibility that a comprehension problem underlies these behavioral disturbances.

As in the language formulation discussion, the formal language situation can be geared to provide a specific diagnostic observations which can clarify atypical patterns noted in the child's language comprehension and, hence, to determine which teaching techniques facilitate language comprehension by the group or individual child. The teacher can design the formal language activities to call for a specific language comprehension skill. She can present material of different auditory lengths to gauge children's attention span for verbal material. She can introduce or note the effect of distracting noises on language comprehension, to see if the children can listen selectively. She can present her verbal directions to involve sequences of action in following her commands. Such activities allow her to observe the children's facility with each of these specific language elements, plot their skills developmentally, and note any atypical patterns which require further individual analysis.

Secondly, the teacher can use the formal language situation to determine what teaching techniques facilitate the children's comprehension development. First, does changing the level of language in the commands help one child follow them more effectively? Does the addition of visual cues or gestures by the teacher facilitate his understanding? Does repetition of the commands aid this process? Does shortening each command and/or allowing a space of time between saying each of three commands aid his ability to follow these commands? What lengthens his auditory attention? Does raising or lowering the pitch or loudness of

TEACHING ACTIVITIES FOR LANGUAGE STIMULATION

A process-oriented approach to stimulating language development involves a melding of diagnosis and teaching into an overall strategy for classroom presentation of materials and activities. This strategy generally follows a test-teach-test-exit philosophy (Miller, Galanter and Pribram, 1960). Thus a teacher observes or tests the children's level of development in the skill or skills that she wishes to teach. She then tries out several teaching strategies. The children's response to these strategies tells her which is the most efficient, and she employs it formally in teaching the skill or concept. Then, she must test the efficacy of her teaching. She does this first in the formal language situation itself to see if the children can retain the lesson from day to day and continue to use the skill. A second and extremely important part of the final testing of the effectiveness of the teaching involves testing whether the children can generalize this newly learned skill or concept to an informal language learning situation. To do this a teacher loads the informal situation by having materials or activities present which can be used to prompt the children to recall and use the skill or concept they have learned. She can then observe whether, in fact, this is a functional skill or concept for the child. If it is, she may go on to teaching another skill or concept. If not, she must take it back into the formal lesson situation and provide the children with more practice in generalizing the skill or concept and then again test whether it is effective in the informal situation.

This teaching approach does not require any major reorganization of the usual preschool program. Rather it is a matter of understanding the activities the teacher generally uses (in terms of the language elements involved) and stressing these differentially for teaching purposes. For example, there are those traditional preschool games or activities which may be utilized as a vehicle for teaching communication skills with little or no modification of their original design, i.e. story time, record playing and songs. Understanding their language components allows them to be used for teaching particular skills and language. The teacher analyzes the language components involved in the activity, observes the group of children at hand to determine their functional comprehension and formulation levels, and notes the atypical patterns of certain children. Once she has done this and tried out some of the teaching strategies so that she knows which are most effective with the group and the individual children, she can design and program these activities to emphasize any of the particular needs of the group or individual children. This kind of individualized program is helpful to all the children, but is particularly essential to the psychoneurologically inefficient and/or disadvantaged.

The rest of this chapter provides a brief sketch and then a detailed discussion of how to teach various language comprehension and formulation skills. First, there is a brief sketch of two language comprehension areas (auditory awareness and discrimination, and understanding verbal materials) and a sketch of the language formulation area. This is followed by four sections discussing these topics in greater detail. Section A covers Understanding Verbal Material in Sequence. Section B provides an extensive discussion on Stimulating Auditory Awareness and Discrimination. In Section C, Informal Language Formulation Activities are presented. Finally, in Section D, there is an outline of Stimulating Language Formulation Development in formal situations.

Activities Which Emphasize Auditory Awareness Discrimination:

Children who encounter difficulty in understanding language or in making sense out of auditory stimuli do not respond to the auditory world in the normal fashion. They may choose to ignore sound, respond inconsistently, or demonstrate disruptive behavior in response to an auditory stimulus. These children need help in developing more acute awareness and appropriate responses to sound. This is a necessary and precursor step to teaching higher level comprehension skills.

Teaching children to respond efficiently and effectively to their auditory environment includes teaching them to listen and respond when they hear their name. Obviously there are numerous opportunities to emphasize this during a routine classroom day. In addition to the spontaneous opportunities which occur, there are a variety of games and songs where listening for one's name is a prerequisite for participation in the activity.

Further there are many activities, songs and action games which demand acute auditory concentration. These activities involve responding to a story, song or record with a specific motion, gesture or verbal response. Such activities are excellent for building better listening skills and, at higher levels, for learning to follow simple directions and/or directions in sequence. These include songs such as "We are very big, now we're very small, Put your finger in the air, Let's all join into the game, When animals get up in the morning." Another good source is the Gene Uttley Auditory Training Album.

The environment in which a child finds himself at any one time is rarely ever so pure that he is asked to listen to only one sound source at a given time. It is therefore important to help children learn attention to the sounds which are most important and meaningful for them at a specific moment and, at the same time, ignore the other sounds impinging upon them. This may be accomplished by gradually building up the amount of background noise the children can tolerate while maintaining their attention on a specific sound or sounds in the foreground. Basic rhythm band activities are excellent devices for promoting auditory awareness and selective listening. Such activities may be utilized to emphasize learning to stop and start, or learning concepts of loud and soft, high and low, etc.

There are those children who are so severely confused by what they hear that it is best to condition effective responses to sound by beginning with gross environmental sounds and perhaps animal noises, leaving the more complex sounds which make up language for a later time. For these children, the basic goal is to condition some motor response to an auditory stimulus, i. e. building blocks, placing pegs in a peg board or a ring on a ring stack toy, raising one's hand, or holding up an appropriate picture when a sound is heard.

All of these activities are precursors to one essential reading readiness activity, the auditory discrimination of language sounds (phonemes) in words. A sound basis in all areas of selective listening and auditory discrimination is essential to good academic performance. See Section B for a further discussion of building auditory awareness and auditory discrimination skills in formal and informal classroom situations.

Activities Which Increase Understanding of Verbal Material

Functioning in a normal preschool setting places continual demands upon children's ability to understand and remember what they hear and to follow directions in sequence. One means of helping children perform more efficiently in these activities is for the teacher to recognize and analyze the complexity of each of these tasks and adjust her requests to their level of functioning. There are many preschool games, songs and activities which rely on short term attention, comprehension of auditory materials, and sequencing of such materials. These activities may be adjusted along a sliding scale with respect to the degree of difficulty and the level of comprehension demanded of the children. Again, the most important aspect of utilizing these activities to emphasize or provide experience with language skills involves understanding the children's functioning level. Knowing this allows the teacher to provide the group with success experiences at this level while challenging them a little bit to achieve a higher functional level.

Typical games and activities which may be utilized for this enhancing verbal understanding are Red Light, Green Light; Mother May I; Simon Says; and Follow the Leader. These activities all involve listening and following directions. They may be modified downward by providing accompanying gestures or they may be made more difficult by demanding that instructions be followed in sequence.

Formal activities whose primary goal is to aid children in following directions and understanding verbal materials may be designed for classroom presentation. Such activities should be utilized with children who demonstrate definite difficulties in this area and who likewise demonstrate an ability to profit from such highly structured activities. Once language skills have been mastered, however, they must be taken out of the context of the formal teaching situation and practiced in some of the classroom activities mentioned above which involve use of the same or similar skills.

It is relatively easy to design a situation where the primary goal is to have children follow simple to increasingly complex sets of verbal directions. After establishing the basic level at which the children function, the teacher can gather together a series of objects or pictures or set up a familiar situation such as a trip to the store. She can then construct verbal directions appropriate to the children's needs around these materials.

Sequencing. The term sequencing has two connotations for the classroom teacher. One involves the concept of order and routine as an integral part of daily activities, and the second involves the learning of language sequences. Specific language activities involving sequencing on an automatic or meaningful basis should really not be presented until the concept of sequence is familiar to the children through becoming an integral part of the daily routine. This means structuring the children's daily environment so that they learn to anticipate a particular event at a specific time. The establishment of daily routines and a specific order of events aids in the later learning of language sequences, as well as helping youngsters understand their world.

Initially, sequencing occurs on an unconscious level as far as the children are concerned as it is dictated by the routines established by the teacher. The teacher should emphasize the sequential element in routines by talking about what happens during the day at school, i.e. "what we do when we come in the morning?", "what we do in the afternoon?", "what happens after lunch?", etc. Once the children begin to recognize that there is a predictable and orderly pattern to the daily routine, the teacher can begin to introduce the concepts of first and last related to what happens. Then, simple object and picture arrangement activities lend themselves to teaching sequencing. The children are given verbal instructions to place objects or pictures in a particular sequence.

Higher levels of verbal sequencing are demanded when a child is asked to follow several commands in appropriate order. Nursery rhymes, activity records, and songs with accompanying gestures or pantomimes are excellent activities for teaching sequencing. Story telling and the question and answer periods which usually follow, as well as flannel board stories, are also excellent techniques for providing experience with verbal sequencing. Games like Telephone, or I Went to the Store, or I Went to the Zoo, where each child is asked to add a part to the story, first having repeated the proceeding parts, are also excellent sequencing and memory devices. Again, these may all be presented on varying levels of difficulty. See Section A: Understanding Verbal Material in Sequence for further discussion of building the children's skill in comprehending verbal material.

Language Formulation Activities

Once having observed the level at which the pupils in her class function in language formulation activities, the teacher begins to see ways and means for influencing their language patterns, and stimulating their language formulation. This involves using the overall program in the classroom as well as formal lesson activities. The teacher stimulates expressive language formulation through providing a good language model in the classroom and, secondly, through using any number of verbal and non-verbal prompts to stimulate the children to express themselves more fully and more efficiently. This is an on-going process which the teacher can consciously employ throughout the classroom day in both informal and formal language activities. Such experiences provide the children with continual practice in language formulation and emphasize the functional role that language can play in their world. Secondly, there are a number of formal teaching activities which stimulate overall development of language formulation.

Providing a language model for the children to emulate and verbally prompting better language formulation are major techinques employed in the classroom situation. For example, let us consider the child with a word finding problem. In helping this child express himself with ease and facility, it is most important that the teacher determine her goal at the onset. If the object is to aid the child to express himself in a particular situation effectively and without losing face in front of his classmates, she utilizes certain strategies. She would be inclined to offer her assistance, perhaps actually supplying the missing word for the child, to avoid embarrassment and the subsequent building-up of negative feelings regarding speech.

However, if the goal is to help the child attain a higher level of functioning, she would challenge him at the next level and utilize devices to aid him in successfully accomplishing the level. Here, specific learning situations may be designed so that the teacher can offer the child other aids to successful performance than actually providing the missing word. For example, take the situation in which children are learning to name pictures of animals which they have just seen on a field trip to the zoo. The teacher might verbally recapitulate the trip for the children, present them with a series of pictures to be named, read a story and ask questions about the zoo animals, and end by singing a song related to a trip to the zoo.

In this situation, the teacher has at her disposal several different types of materials as well as techniques which may be utilized to aid the child who has difficulty finding a particular word, and she must find the ones to which he is most responsive. When he has difficulty thinking of a word, is he helped by 1) verbally being presented with the correct word and a second choice (can he recognize the appropriate word)? 2) being presented with the picture of the word? 3) hearing the appropriate word used in a sentence? 4) having the teacher utter the first sound or syllable of the word? 5) having the teacher use a verbal triggering device to elicit the appropriate word or response, i. e. knife and ______(fork), bread and ______(butter), mouth and ______(nose)? Step 5 utilizes a more automatic form of speech and makes the so-called lost word sometimes more easy to elicit. 6) At the very lowest level, the child might indicate his recognition of the word through using gestures or some graphic representation of the missing word such as pointing or actually picking and holding up the object instead of verbalizing the word.

In addition, there are many specific games or lessons in which the teacher can help a child with a word finding problem. He should be continually presented with little drill situations requiring rapid naming of pictures and objects. This will build his tolerance for and facility with labelling. If there is a teacher's aide or student teacher in the class, she might take a particular child or small group of children aside and engage in this type of activity for five minutes at a time daily. Further, children with word finding problems can often achieve greater facility with labelling through memorization and recitation of songs, nursery rhymes and poems. In this way, objects, events and situations become familiar or over-learned, and therefore are more easily called forth when the word is needed.

The following activities will aid children who present problems with word retrieval and will help the general vocabulary and concept development for all of the children in the class. 1) Categorization activities: naming objects and pictures. 2) Reading stories: naming and discussing the pictures. 3) Sentence completion or fill-in games, i. e. I went to the store and bought some ______, I went to the zoo and saw ________, quack, quack went the ______, a knife is to ______, a hat is to ______. 4) Learning simple poems, nursery rhymes, and songs at the piano or through records. 5) Use of activity records with gestures and pointing responses to aid labelling and word selection. 6) Word elaboration games: i. e. tell me everything you can about a boat: a) you put it in the water, b) it is to sail, c) it has sails, d) sometimes it has a motor, e) it carries people, etc.

There are also a number of activities that the teacher can use to stimulate language construction. These are the kinds of activities which stimulate children to talk in sentence form and can be graded to prompt the level of language construction the children are capable of handling. Examples of these are picture description activities where the pictures have multiple scenes or several figures or animals in action to be integrated together or story telling activities stimulated through such materials as flannel board pictures, series pictures or retelling a familiar book. Show and Tell activities, of course, allow children to initiate their own content in language construction. An activity, called Paper Bag Dramatics, where a child is presented with one or more objects and asked to create a story about them could also be used.

Other activities which stimulate children's language constructions through verbal cues include presenting the child with two or more words and asking him to make up a sentence (story) using the words and games such as Telephone or other similar story telling activities which require that one child begin a story and each child add a part. These activities are for more organized children who can handle more sophisticated language content.

Drama games are also good for stimulating language construction. For example, the teacher can set up a familiar situation such as a trip to the store, to the zoo, a bus ride, etc. and encourage each child to play a part in this activity, using the appropriate conversation. Similarly, reading a story and subsequently acting it out allows the children to carry on conversations with dialogue provided for them. Thus, to begin with, the teacher may provide the narration and, as the story becomes more familiar, the children are encouraged to carry on the dialogue. Guess Who games, where one child is selected to be a familiar cartoon or T V character without knowing it and must ask specific questions of the class in order to ascertain or guess his identity, are also useful.

In sections, C and D, many of these activities are discussed at length. The method of presenting these activities and the kind of language construction they elicit is outlined, as well as how to sequence them so that the teacher can select one that will just challenge the group's language level.

Articulation Stimulation. The teacher's role in stimulating correct articulation patterns and intelligible speech is a variable one. Again, the understanding of the articulation pattern and when it indicates an underlying language or motor speech problem is essential. Specific and extensive articulation problems are normally handled by speech and language therapist and, if the child is concomittantly receiving therapy, the teacher should be in close contact with the speech therapist. She can be given suggestions on how she might help the child in the class.

However, there are some things a classroom teacher might do in order to encourage appropriate articulation patterns. The teacher's major role is one of providing the correct language model. She might attempt to make herself aware of the child's defective sound patterns, select one at a time and encourage correct speech by providing a consistent model for him to copy. It is helpful if she can note any variability in terms of his ability to produce specific sounds. For example, although it may be misarticulated, it may be misarticulated only in specific positions and only in specific words. If this is true, the teacher can provide him with opportunities to correct his defective sound patterns by exaggerating this sound for him and showing him how it is produced.

Sometimes a child's articulation errors are very inconsistent and, merely by alerting him to the appearance of the sound in the word, he is able to produce it correctly. This is often true of sound omissions, and the articulation errors of children with infantile speech patterns, where their articulation development is not commensurate with the rest of their language skills or their chronological age. Sometimes these children just need to be made aware of defective sound patterns and when and how to listen for them. Conversely, if the child is able to benefit from this kind of stimulation, it may be indicative of a simple infantile speech pattern rather than an underlying language difficulty.

A. UNDERSTANDING VERBAL MATERIAL IN SEQUENCE

The following analysis of the understanding of verbal material is presented to give the teacher techniques which she may utilize in the classroom when faced with children who do not understand verbal directions in the form she initially presents. Many teachers are aware that their instructions do not 'get through', but have only a vague idea of how to vary these instructions up or down or vary the context of the direction in order to elicit better responses from children. By increasing her awareness of the level and complexlity of the demands she is making on the children in giving instructions, the teacher may develop a better understanding of where and why children's performance breaks down. The following discussion will give her some idea of this and how she can more effectively use both formal lessons and informal situations as they arise in the classroom to help children develop more proficiency. She may do this only if she understands the language principles involved in commands and the sequential steps in developing these.

It should be stated that these situations proceed rapidly in the classroom and one cannot stop in the middle of a lesson for 30 or even 10 children and decide how one is going to vary the level of a command for Johnny who just answered inappropriately. However, it is only by generally orienting to the whole problem that the teacher can learn to respond rapidly and effectively. Gradually the following analysis can become a way of thinking and a very crucial asset in her armamentorium for helping children, and individualizing the program becomes second nature to her.

The first task for the teacher is to attempt to establish each child's functioning level for understanding language. For example, at what level is he consistently able to follow directions? If he performs adequately with one level commands and encounters occasional difficulty with two level commands but always fails at three level commands, she has some idea how she might program her language activities. It is most important for the teacher to establish the functional level of comprehension for each child so that she knows what demands to make upon him in every day situations. In this way she can help him function more adequately and attain higher levels of skill through appropriate programming of language activities.

When the teacher's goal is to enable the child to respond optimally in the classroom situation, her material should be geared toward his so-called functioning level, i.e. if he only understands simple noun-verb phrases, this is how instructions should be given to him. When the teacher's goal is to help the child attain a higher level of functioning or improve in a particular skill, she should assist him to that next level by challenging him and utilizing the following devices which support him in reaching for it.

First, the teacher can simplify the language in commands and keep them short. Second, she may aid a child's memory by holding up the object mentioned in the command and using gestures by repeating the command, or by encouraging the child to repeat the command prior to executing it. Third, she can help him maintain the sequence of the command as he engages in the activity by having him repeat the command as he goes along,by prompting the second half of the command once he has completed the first and, in the most severe cases, taking the child through the steps of the command while repeating it for him.

Language in Single Commands. To understand the child's ability to follow sequential directions as well as to know how to vary her own commands to match his understanding, the teacher needs some detailed information. Most teachers understand the terminology of one, two or three level commands. However, they often lose sight of the fact that even one level commands run the gamut from very simple to highly complex. Three major factors affect the difficulty of a one level command. The first involves the number and complexity of the modifiers and extraneous verbal elaborations in the command, for example "Go get the large yellow book with the blue and white spotted ball on the cover." The next two factors involve how representational and concrete the command is and whether it involve things in the child's immediate environment or whether it removed in time and space or made complex by its level of abstraction. Telling the child to "Get something to read", as opposed to "Get a book", is an example of more abstract command. Further, asking a child to retrieve a book within his visual field is a simpler task than asking him to set something which is a great distance from the point where the verbal direction is given, for example, "Get the book in the other room". In the latter case, the child cannot be aided by the visual cues of the object before him, or the teacher's repitition of the command.

Multi-level Commands. A two level command not only involves all of the comprehension of language factors mentioned above for the one level command but has the added problem of memory, inhibition of action, continued listening, storage of the commands in the proper sequence and follow-through action in sequence. Three level and four level commands are merely extensions of the two level command. When the teacher asks the child to remember and act on two separate thoughts or commands, the problem has changed considerably. Here the teacher is asking the child to listen to one command, comprehend it, but not act upon that command immediately. He is to store it in his memory, wait, anticipate the second command, and understand it while trying to remember the first. He must then rehearse both commands to himself in sequence and act upon them, continually monitoring the adequacy of his actions. This is not so much a matter of decoding the phonology and grammar of the sentence as in a one level command, but is more a matter of set taking, language retention in sequence, and inhibition of action.

Thus, to help the child develop proficiency in following multi-level commands, the teacher must provide experience along two dimensions.

The first is helping the child handle the language complexity of the individual levels, and the second is to understand the strategy or set for the memory storage of language that involves sequence. In any experience or lesson in following directions in sequence, the teacher should aid the child in establishing this set. To do this, she can use markers to get his attention before giving the command and remind him that there is more than one command coming, so that he is prepared to listen for a series. For example, the teacher may say, "Remember now, I want you to listen for two things." In addition, she might use some of the memory aids outlined above under teaching single commands.

Further, when the teacher begins to introduce the notion of multi-level commands, she should select her commands so that they have a logical sequence. This helps the child understand and use the strategy of remembering things in order. If she programs commands so that they are logical in terms of the child's actions, she will be emphasizing the sequential aspect. For instance, when she asks him "Go get the ball and the book", the teacher must make sure the ball is closer to the child than the book so the action sequence will be logical. The same principle applies in using commands to direct a child's routine classroom actions, i. e. "Get the soap from the cupboard and then wash your hands." This is a more elaborate two level command but still has the principle of the logical sequence which must be followed. The more illogical or non-related the items in the command, the more the teacher is asking the child to rely purely on verbal memory. To help him build up this memory, the teacher progresses from commands which have the sequence as inherent part of the action to carry them through, to the commands where the sequence is imposed by the words alone.

Further development of following multi-level commands is accomplished by elaborating the language involved in each of the commands from extremely simple to extremely complex, both in terms of language components and also conceptual level. Once the child is able to handle a two level command in many of these forms, the teacher can add one more command, gradually increasing the child's ability to act on commands in sequence, from following two commands to following three, four, etc. In each case, as she increases the number of commands to be followed, the teacher should return to the beginning of the language complexity progression and gradually build up the child's proficiency with the higher level command.

The Language Complexity Sequence.

To gradually stretch the child's ability to retain and act upon sequential directions, the teacher can use the following progression of experiences with commands. The first step involves introducing some sequence into the one level command. For example, "John, go get the book and the paste." In fact, this is a two level command; paraphrased, it reads, "John, go get the book and John also get the paste". This example represents the simplest and first approach to the two level command. The two objects are continguous in space, immediate and concrete, and the sentence construction is simple. Next, the teacher might extend this by giving the child two distinct, yet simple, concrete and representational commands in simple language form, i.e. "Get the paste and get the book."

Once the child understands the strategy involved well enough to perform consistently on the above two steps, he needs practice elaborating the language complexity in the command. This simple two level command can be varied by first keeping the verbs the same and giving the child two nouns, "Give me the ball and then give me the cup," and then by varying the verbs that go with simple nouns, "Throw the ball and bring me the cup".

Next, the sequence element becomes incorporated into the command. This is done first by introducing prepositions which dictate the action, i.e. "Get the book and put it under the table." From here the teacher might move to the next level of complexity, "Get the book and put the ball under the table." The first command is simpler as it involves the same noun in two different actions that must be followed in sequence if at all, for the child can't put the book under the table until he gets it. The second involves two separate nouns in two different actions and the child's memory of the language in sequence dictates the sequence of the action.

Following the above sequential steps, the teacher can start with the child at his functional level in understanding verbal material in sequence and stimulate development of his skills in an orderly fashion.

B. STIMULATING AUDITORY AWARENESS AND DISCRIMINATION

Auditory discrimination is a basic skill needed to later understand the symbol code of reading and spelling. A child must be aware of auditory stimuli as distinct cues to which he can respond. This awareness builds from a very rudimentary level with the child listening for his name in order to follow directions, up to the point where he can make fine discriminations between very similar sounding phonemes in varying positions in words. It is the latter skill which gives him a firm basis for reading and spelling activities.

Therefore, the preschool teacher is concerned with bringing the auditory discrimination skill to as high a level as she can. However, keeping in mind that the purpose is to prepare him for the skills he needs in reading and spelling, it is useful to program as much of the auditory discrimination activity using words and phrases as possible. Although it is often necessary and useful to begin teaching these activities with noise makers to establish the gross differences between sounds, as soon as the child gets to a particular level of skill with noise maker discriminations, it is wise to switch to language-based materials and perfect discrimination skills with these materials rather than the noise makers.

Noise makers are often a useful material to start with for the following reasons. Noise makers produce loud and grossly dissimilar noises. Children are used to listening for noises and assign noise making properties to these objects. Therefore they are already attuned to the fact that there is an auditory stimulus involved in the noise maker and can be taught to listen for this. When words are introduced, the discrimination problem is considerably different. The children are used to words and words in sequence (sentences), but they are not used to discriminating specific properties of them. Phoneme and syllable discriminations have to be consciously taught. The children must learn which properties of the stimulus are to be discriminated. Many find this difficult, but learning it in the kindergarten gives them an essential skill for later auditory processing in reading and spelling.

Auditory discrimination plays several roles in reading and spelling processes. In reading, the child associates an auditory pattern with a printed visual stimuli. It is generally felt that children rehearse the translation from the printed symbol to the auditory configuration by pronouncing the syllables aloud, in temporal order. To make this a meaningful experience for children, they have to have a good background in auditory discrimination; that is, an awareness of auditory properties and their distinctiveness. Some auditory configurations are very similar and their visual symbols are also very similar. Children's academic performance often breaks down when they cannot make the auditory discrimination well enough to form a good basis for the auditory-visual match. They function adequately when the auditory configurations are highly dissimilar and can make these associations relatively well. However, they become very confused when the auditory patterns become similar, since their auditory discrimination skills are not precise enough to hear the differences, e.g. between f, s, th, z, and v. As a result, they miscall or mismatch these auditory and visual symbols. There is a particularly good reading readiness series that uses a well sequenced approach to phonetic and auditory discrimination skills. This is the series Structural Reading Series, by Catherine Stern, published by the L. W. Singer Company, a division of Random House.

Building Auditory Attention and Selective Listening.

The teacher can use many informal situations to increase children's auditory awareness. One of the simplest and most basic is to help the child by using his name as a marker to focus his attention before directions are given. It is useful to start this process by giving the child's name first, as an attention getting device, and then giving the verbal directions. Once the child is able to handle this level of auditory attention and selective listening, it is possible to give the direction first and then put the name at the end to see if he is able to sustain his attention over that period of time. Initially, directions may have to be repeated following his name as well.

In this way the teacher gradually brings the children to the point where their auditory attention is focused as soon as verbal material begins. Using the children's names first gives them a chance to orient before the verbal material begins. Gradually, as this becomes more automatic, the name can be placed at the end and does not have to be used as much as a marker. Eye contact can often be substituted for the name as a marker to help children focus their auditory attention immediately. Gradually, of course, the children must learn to orient and attend immediately when they hear someone begin to speak, immediately enough so that they do not lose the first part of the instruction.

This process of orientation is a selective one. The children have to learn to orient to the appropriate language stimulation, i. e. that from the teacher or another child. In doing this, they must learn to shut out other language stimuli, such as noises outside the classroom, noises made by the other children, etc. Practice in this selective orientation is an essential part of the overall classroom procedure and should be incorporated into the teacher's general daily routines where possible. Children's ability to inhibit responses to extraneous auditory information depends on whether they can immediately identify the noise and, therefore, ignore it. If they cannot readily assign a meaning to the extraneous auditory stimulation, they they have to expend energy in trying to figure out or to process this competing auditory information.

Thus, one of the ways a teacher can help children handle the barrage of auditory stimuli more effectively is to help them assign meaning to the various sounds and auditory stimuli that are present in the environment. By helping them realize which sounds are, and are not, to be attended to at various times in the classroom, she can aid this process.

One suggestion which increases auditory awareness and also helps the children assign meaning to various noises in the classroom involves discussing the noises that occur daily in the classroom, i. e. a truck going by the window. This often distracts a number of children in the group. The teacher can use this distraction to help the children identify the noise as the sound of a truck and ignore it. This, in turn, helps the children identify this noise the next time and inhibit response to it more rapidly. The same principle can be applied to turn any auditory distraction into a training techinque and thus a helpful aspect of the classroom procedure.

As well as capitalizing on the extraneous noises which occur naturally in the situation, the teacher can consciously introduce background noises and teach the children how to select the important parts of auditory materials for attention. This, of course, is introduced after the children are better able to handle auditory material. For instance, playing a record in the background during a language activity can help children selectively listen to the material being presented by the teacher in the language lesson and learn to screen out or inhibit response to the record. Such techniques augment the selective listening skills of the children.

As discussed in the introduction to the teaching section, the importance of practicing skills taught (or to be taught) in formal lessons in the informal periods of the classroom should be emphasized. Capitalizing on spontaneous occurences as much as possible gives the children familiarity and practice with the kinds of things that they will later be asked to do in a formal situation. Such informal situations also provide a test of how functional the children's learning has been. If they are able to apply their new skills appropriately in an informal situation, it suggests that sufficient generalization experience has been given and the skills are part of the children's working repertoire.

In terms of auditory discrimination, this can be seen in several ways. First, how effective are the children in inhibiting responses to auditory distractors? The teacher can help the children be more effective and chart their progress in learning to be selective listeners. She can call attention to auditory noises in the background and use them to heighten the children's awareness of sound and its properties as well as teaching them to assign meaning to it and therefore inhibit response to it.

This discussion has particular relevence for children who are disadvantaged and/or psychoneurologically inefficient. It is a common observation that disadvantaged children are very poor selective listeners. It is hypothesized that, because their homes are noisy and chaotic, auditory material has little relevance and they learn to shut out incoming sound. As a result, of course, they come with a poor background for identifying and assigning meaning to noises and responding or not responding to them. They come inclined not to respond at all. Since the emphasis of this section is on how to lower the level of auditory stimulation and help children attend and assign meaning and, therefore, deal with it in some adequate fashion, the activity is appropriate for such children.

For psychoneurologically inefficient and disorganized children, the problem has a slightly different cast. These children are sometimes unable to inhibit responses to stimuli. They are stimulus bound or driven to respond to all stimuli, auditory and other types. Therefore, their performance is very distractable and disorganized. Here the problem is one of helping them learn to respond and automatically assign meaning to a number of sounds so that they can inhibit response to them, thereby cutting down the distractability. The second problem is the same as that of the disadvantaged, i. e. to listen selectively to the important elements of the auditory stimuli by shutting out inappropriate cues, and responding to the appropriate ones.

Formal Auditory Discrimination Training Activities.

In building good auditory discrimination in children, there are two factors to take into account. The first is the kind of auditory stimuli that can be used and the properties inherent in them. The second is how to sequence the presentation of the stimuli to help the children become facile in the auditory discrimination task. For instance, auditory stimuli used to train children in discrimination are noise makers, words, phonemes, and words in phrases. These stimuli in themselves have different difficulty levels. For example, training of phoneme discrimination doesn't start before the children can discriminate noise makers. Rather, children are trained to a certain level of proficiency with noise makers before they are asked to discriminate words. Then they are trained to a certain level in discriminating words before they are asked to discriminate words in phrases or single phonemes.

In teaching auditory discrimination, there is also a sequence for presenting activities. The first step is to saturate the children with the kind of sounds they are going to hear, usually fortified by visual or movement cues. For example, in presenting words and phrases, the children are given a backlog of experiences with the stimuli to be discriminated. Thus, if the sound m as it occurs in the initial position in words is the focus of the discrimination training, the teacher talks about the words that start with m such as milk, mother, may, Monday. Thus she is giving the children a great deal of experience to draw on and also calling attention to the phoneme she is about to present.

Once the group is familiar with the stimuli to be discriminated, the first lesson is to respond when the particular sound to be discriminated is heard, e.g. to raise their hands when the bell is ringing and put their hands down when the bell is not ringing; to raise their hands when they hear the sound bat in the series "milk, meat, Monday, bat".

Next the children are required to select between two possible alternatives. For instance, teacher and children have the same set of objects, e.g. a bell and drum. When the teacher rings the bell, the children are to ring their bells; when she pounds on her drum, they are to pound on their drums. Thus they are to choose which object makes the appropriate noise. Once the children are successful in this, the objects can be removed from view and they can be asked to match the sounds on the basis of auditory stimuli alone. This is always done initially with highly dissimilar sounds, either in noise makers or words. Gradually the discrimination is refined by making the auditory discrimination problem much harder and reducing the visual cues. Then, the number of auditory stimuli the children are to discriminate can be increased. Finally, the discrimination is removed more in time, e.g. ring a bell, ask the children to remember for a period of time that it was the bell and then respond.

This represents the sequence of presenting discrimination tasks to children. Next, the particular properties of each kind of auditory stimuli and how they are presented in the above sequence is discussed.

Noise Makers

Noise makers provide a good introduction for auditory discrimination training. They help the children learn the basic set for auditory discrimination tasks. However, once children can handle the task with a degree of proficiency, auditory discrimination activities should involve word units.

Noise makers can be grossly dissimilar visually and auditorally or can be similar visually and auditorally. Further, in most cases, the motor act associated with production of the sound is different for each noise maker and this helps to associate it with its sound. The children should be taken along a sequence of skill development so that they will ultimately be able to perform with some proficiency when visual and auditory presentations are similar.

The following is an outline which can be used for all levels of introducing basic auditory discrimination and awareness.

Step 1: Familiarization. Name the object for the children and the function, while the function is being demonstrated by the teacher, i.e. "Ring the bell"; "The bell rings". Name the object and function while the children imitate the teacher. It is important to give the children sufficient familiarization with the noise maker and the sound that it presents so that they have background of experience to draw on when asked to discriminate it.

Step 2: Presence-Absence Awareness. a) With the object still within the children's visual fields, have them respond with a motor act to the presence of the sound when it starts and make no response when the sound stops. It is useful to have the children perform a very simple motor act such as placing blocks in a pail or raising their hands. However, complex motor acts can interfere with the children's listening concentration, i. e., responses such as clapping or stamping the feet will often produce perseverative patterns and make it difficult to control the group.

b) Next, withdraw the object from their visual field and have the children respond with a simple motor act when they hear the sound and stop when it stops.

c) When the children can do this easily, the teacher introduces another noise maker, grossly different from the first, both auditorially and visually, Grossly dissimilar noise makers include drums, bells, clackers, horns, cymbals, tamborines, sticks, whistles, plastic bottles, tin cans with soft or hard objects inside them to produce various sounds.

She then goes through the above sequence of introduction of giving the children experience with sounds to enhance the realization that a particular sound is associated with a particular noise maker. This still involves requiring motor responses when a sound is heard and no response when there is no sound present. When the child has a repertoire of sounds he can respond to, the teacher can go on to the discrimination problem.

Step 3: Duplicate Objects - The Basic Discrimination Problem. The teacher now places two already introduced noise makers in front of the children, i. e. a drum and bell. She reminds them of the sounds of these noise makers by sounding them and having the child imitate her, i. e. ringing the bell when the teacher rings her bell. She then withdraws her set of noise makers from view and has the children respond by indicating either the drum or the bell when they hear one or the other. Once the children have the basic idea, she can go on and introduce four to five more grossly dissimilar sounds, such as the bell, horn, drum, and have the children learn to discriminate these, one at a time, then gradually increase their ability to discriminate between three, four and five at a time. When the children's responses to these are reliable, then she can go on to the next steps described below. At this point, the children have built a foundation upon which to build more complex skills with noise makers and other auditory stimuli.

Step 4: Refining the Discrimination. The basic principle behind the following step is that the teacher is attempting to refine the children's discrimination auditorally. She refines the auditory discrimination problem by presenting pairs of noise makers that gradually become more similar auditorally. She may do this in several ways. The first involves using some moderately auditorally similar noismakers which are different visually and have a different name. The following pairs of objects could be considered to fall in this category. A tamborine and a coffee can filled with objects which give you a similar sound to a tamborine; a cricket and a whirler (halloween noise maker); two wind instruments which produce similar sounds, etc.

Next, she can move to paired discriminations that involve the noise makers which produce slightly different sounds and can be discriminated auditorally and visually, i. e. a large bell and a small bell, a large drum and a small drum, glasses of water that produce different sounds, different size sticks to be pounded, different size boxes or cans with the same objects inside them.

This auditory discrimination problem can be made considerably more complex by using dishwashing liquid bottles, coffee cans or other container filled with rice and beans. This reduces the visual cues to a minimum and increases the reliance on auditory patterns to make the discrimination. This is a very difficult noise maker discrimination for a child to make. However, there is some question as to the value of taking the child to this point in noise maker discrimination. Rather we feel that once the child has established the basic discrimination of noise makers on the level of large bell - small bell, one should then begin to present auditory discrimination problems in the form of words.

A good transition between auditory discrimination of noise makers and actual words is the following use of children's names and voices in auditory discrimination games. The purpose of this activity is to give the child the idea that it is the vocal quality and resonance, as well as the words, which can be used in discriminating auditorally. The following activities can be used in helping the child establish good auditory awareness. The easiest thing for children to learn to discriminate and respond to, of course, is their names. One wants to establish the name as a quick, immediate marker for auditory attention. Practice in responding quickly when their names are called is a good beginning activity to get the children used to responding to words and discriminating them. (Also see earlier discussion on the use of children's names in informal situations.)

After they have had a fair amount of experience in the classroom situation with hearing the other children talk, the children can play a game of recognizing each other's voices. Blind-fold one of the children, have another child stand up and say something to the blind-folded child. The child is then to guess which of his classmates is doing the talking. If the children are seated in a circle or in a group and the child knows where most of the children are seated, he can get extra cues by localizing the point from which the sound comes to help him in the discrimination.

To make this game harder, one child can go behind a blackboard and the blind-folded child must again guess which child is doing the talking. This step of course reduces the possibility of guessing by localizing the sound. This game can be varied by having the children change their own voice qualities in an attempt to fool the blind-folded child. Many children are quite clever in disguising their voices and find this an intriguing activity. This of course is a reasonably high level of auditory discrimination to be made; however, it is done in highly motivating circumstances and is well worth considering as a possible auditory discrimination game.

Discrimination of Words and Phonemes

Auditory discrimination of phonemes in words follows the same patterns of presentation described for use with the noise makers. To exemplify the steps presented, the problem of discriminating m in the initial position in words is used as an example. Later, series of discrimination problems of increasing difficulty and lists of examples of the sequence of presentation within each series is presented.

Sounds should be initially presented in whole word units, and not as individual phonemes or in nonsense material. We feel strongly that it is as easy, and much more useful, for a child to make the discrimination within the context of the word unit. Using a one syllable word provides the same auditory discrimination cues as a nonsense word. Although, at later stages, it may be useful to set up an individual phoneme discrimination problem through using nonsense syllables or phoneme presentation, beginning here is very confusing for many children. Further, it does nothing to help them understand that the importance of making this discrimination is to understand and comprehend words more effectively. In reading and spelling activities, children are asked to put individual phonetic elements together to form the word units. Thus, it is useful to establish the fact that the discrimination is part of understanding the word unit. This takes the auditory discrimination task from experiential to abstract material in order to help the child understand the task and the reasons for it more easily.

When giving a series of words, the position of the stimulus word to be discriminated in the series affects the different difficulty level of the discrimination task. The closer it is to the beginning, the easier it will be; the farther it is toward the end, the more difficult.

It is important that this task is not introduced with "Children, we are going to listen to the m sound." This is a highly abstract way of introducing the auditory discrimination task and often interferes with the children's ability to handle it. Rather, call attention to this phoneme by saying "We are going to find the word man", thereby giving the child the whole word to discriminate rather than just the phoneme. This, in conjunction with the familiarization step to be discussed, emphasizes the phoneme for the children.

Step 1: Familiarization: The children need to be given a great deal of experience with the word or phoneme to be discriminated. There are several ways of doing this. For instance, the phoneme to be learned is the m sound in the initial position, the children and teacher may talk about things that begin with this sound and build up a background of experience, for instance, milk, Monday, may, Mommy. It is helpful to use pictures to stimulate the words that begin with this sound. It is also useful to employ a mirror so the children can see how this particular sound is formed and so begin to use these extra cues to help them discriminate the auditory stimulus.

There are a number of simple techniques for giving the children experience with the motor acts which make sounds. For instance, in accentuating the difference between p and b, p produces air in its execution while b does not (the b is voiced and the p is voiceless). This difference can be accentuated by having the children blow something at the same time they say p, i.e., blowing out a bubble or blowing a tissue while saying p versus b. This helps the children make the sound and therefore accentuate the discrimination. The same principle can be used for a number of sound pairs. Once the children have had a sufficent introduction to the words that begin with this sound, they can go on to Step 2.

Step 2: Presence-Absence Awareness. This can be done in several ways. The children can respond to the presence of a sound by the teacher giving a series of words, only one of which begins with the m sound. The children are to raise their hands when they hear the word beginning with m. To begin with, give the children as many cues as possible to help them make the discrimination. At first, the series of words should be all the same except for the stimulus word, i. e. table, table, table, man, table. The other word should be as different from the m sound as possible. The fact that "table" has two syllables while "man" has only one gives the child extra auditory cues.

Once the child is able to verbally or motorically respond to the presence of a particular sound, the teacher introduces several sounds following the same principle. She builds up the children's repertoire to the point where they are able to discriminate the presence of these particular sounds in a reliable and consistent fashion.

Step 3: The Basic Discrimination Problems--Word in Word Series. Once the children are attuned to listening for the presence of a stimulus word in a word series, the discrimination problem is made increasingly difficult by embedding the stimulus word in the following word series.

a) First, the series words are grossly dissimilar auditorally (phonemically) as well as in syllable number from the stimulus word (e. g. hotdog-man-elephant).

b) The series words are grossly dissimilar phonemically but have the same number of syllables (e. g. cake-man-spoon-shoes).

c) The series words contain one word similar phonemically to the stimulus word (e. g. cake-fan-man-spoon).

d) All series words are similar except the syllable to be discriminated, whether initial, final or medial (e. g. pan-fan-man-can).

e) Same as d) but with cognitive distractors; e) step not always possible (e. g. pan-Dan-man; nose, rose, hose, toes).

Step 4: Refining the Discrimination. Obviously, the discrimination difficulty of the stimulus word determines the sequence in which the teacher presents the stimulus words. Our example, the sound m in the initial position, is one of the easiest discriminations and is one of the first presented.

In selecting the words to be discriminated, there are several dimensions for ordering words in terms of their discriminatory difficulty. The first and most obvious is the position of the sound in the word to be discriminated. It is far easier to discriminate the sound in an initial position than it is the final position, and most difficult when it is in a medial position. Thus, when beginning these activities, begin with sounds in the initial position.

Within each of the positions, the following variables must be kept in mind. The position of the articulators in making the sounds, the voiced versus voiceless quality, the developmental level of the articulation pattern of the children, the manner of production (whether or not the sound is a plosive or fricative), frequency of occurence in normal speech patterns, the sound properties (i. e. the frequency, length and pitch), and the word in which the sound is imbedded (is it a word in the child's vocabulary or experience or its it an unknown word?).

The lists of words series, attached at the end of Section B present four increasing levels of difficulty (of phoneme-within-word discriminations) in the initial and final positions respectively. The first three levels involve sounds articulated from front to back of the oral cavity (ease of articulation). Level IV involves sounds that are much more difficult in articulatory production and develop much later developmentally. It is interesting to note that increasing discrimination levels follow the sequence of articulation development. This may indicate the effects of practice or may be related to the experimental speculation that precision in discrimination is built through a sensori-motor arc association.

Thus, the teacher begins these discrimination activities with sounds in the initial position at level one and, in the formal teaching situation, builds up a repertoire of the sounds. Then she should go on to strengthen the children's experience with these sounds in informal activities. These can be included in music or in snack or Show and Tell, wherever these sounds occur. The teacher can give the children spontaneous informal practice on these kinds of discriminations as such situations arise.

Generally when phoneme discrimination is presented in a formal language period, the teacher aids the children to discriminate the phoneme by emphasizing it. Once the discrimination is made, it is essential to give the children practice in less exaggerated discrimination tasks. To do this, the teacher can reduce the emphasis she places on the phonemes in the structured language situation; however, this is where practice in the informal situations is a useful aid to generalizing the discrimination. In this way, the discrimination becomes a functional skill for the child and not just a formal language exercise.

After the children have a well-established repertoire of the sounds in the first levels in the initial position, the teacher begins to differentiate the lessons. She continues introducing new sounds in the initial position but also introduces the problem of putting the now familiar sounds into another position in the word, i. e. the final position. She begins by keeping the initial phonemes as dissimilar as possible to acquire distinctiveness of cues. She gradually helps the children discriminate this phoneme in increasingly similar configurations in both the final and medial positions.

When introducing sounds in the final position, rhyming becomes a primary form of emphasizing this discrimination in both familiarization activities and in discrimination problems. Rhyming activities appear in language productions when the children reach a certain stage in expressive language facility. In average children this occurs around the age of four. At this point, the child has developed sufficient language formulation skills to be able to handle elaboration and playing with words. He has sufficient storage of words and their properties and can use them in elaborated simple sentences. Therefore, he is able to call on this experience to participate in rhyming activities. Rhyming is a difficult thing for children with less language proficiency than this level and introducing rhyming activity may have disastrous results. Hence, rhyming should be introduced when the children are at a level where they can participate in such activities easily.

Practice in rhyming through songs and poems in informal language situations provides the child with a good basis for the task of discriminating sounds in the final position as presented in a more formalized language situation. At this point, it may be useful to employ nonsense rhyming activities in the informal situation, if they are fun for children,so that they readily engage in this activity. If the children do not consider it fun, their language skills are not likely at a level where they are able to handle this kind of elaboration and it should not be insisted upon.

Discriminating sounds in the final and medial positions follows the same procedure as learning to discriminate sounds in the initial position. Preschool activities usually concentrate on discriminations in the initial and final positions, as these are generally within the capacity of young children. Discriminating sounds in the medial position is generally beyond the scope of preschoolers.

INITIAL POSITION PHONEME DISCRIMINATIONS:
(Word Series in Increasing Difficulty)

LEVEL I /p/-/b/-/m/-/w/

/b/	table	bat	table	table
a.	table	bat	can	apple
b.	kite	bat	can	chair
c.	kite	bat	can	hat
d.	hat	bat	sat	rat

/m/	cake	cake	man	cake
a.	cake	hotdog	man	elephant
b.	cake	shoe	man	spoon
c.	cake	fan	man	spoon
d.	pan	fan	man	can
e.	pan	Dan	man	can

LEVEL II /t/-/d/-/n/

/n/	nail	boats	boats	boats
a.	nail	boots	cookie	sister
b.	nail	hand	bread	paint
c.	nail	hand	sail	paint
d.	nail	sail	pail	mail

/t/	pencil	pencil	pencil	toes
a.	pencil	string	crayon	toes
b.	door	paint	string	toes
c.	door	rose	string	toes
d.	grows	rose	hose	toes
e.	nose	rose	hose	toes

LEVEL III /k/-/g/-/ng/-/j/-/y/-/h/

/k/	kite	swing	swing	swing
a.	kite	swing	ladder	banana
b.	kite	swing	milk	door
c.	kite	light	milk	door
d.	kite	light	write	bite

/g/	go	mother	mother	mother
a.	go	mother	scissors	chair
b.	go	door	book	chair
c.	go	bow	door	chair
d.	go	no	bow	toe

/h/	hair	table	table	table
a.	hair	table	mouth	squirrel
b.	hair	train	mouth	girl
c.	hair	bear	train	girl
d.	hair	bear	pear	tear

LEVEL IV /f/-/v/-/th/-/sh/-/zh/-/j/-/ch/-/s/-/z/-/l/-/r/

/f/	face	bike	bike	bike
a.	face	bike	elephant	tv
b.	face	bike	soap	knife
c.	face	bike	race	knife
d.	face	trace	lace	race

/ch/	chair	ball	ball	ball
a.	chair	ball	turtle	happy
b.	chair	ball	hat	toy
c.	chair	bear	hat	toy
d.	chair	bear	hair	pear

/s/	sun	cat	cat	cat
a.	sun	cat	birthday	chicken
b.	sun	cat	boy	boat
c.	sun	cat	run	boat
d.	sun	gun	run	fun

/r/	ring	basket	basket	basket
a.	ring	basket	candle	window
b.	ring	book	pot	corn
c.	ring	sing	book	corn
d.	ring	sing	wing	king

FINAL POSITION PHONEME DISCRIMINATIONS:
(Word Series in Increasing Difficulty)

LEVEL I /p/-/b/-/m/-/w/

/m/	potato	come	potato	potato
a.	potato	come	eyebrow	carpet
b.	house	come	glass	eye
c.	rough	come	cut	cut
d.	house	come	glass	cup

/p/	map	finger	finger	finger
a.	map	finger	kitten	refrigerator
b.	map	light	rug	tree
c.	map	light	man	tree
d.	map	map	mat	mad

LEVEL II /t/-/d/-/n/

/n/	ran	cushion	cushion	cushion
a.	ran	cushion	paper	suitcase
b.	ran	lips	pole	street
c.	ran	lips	rag	street
d.	ran	rack	rat	rap

/t/	bought	crayon	crayon	crayon
a.	bought	crayon	string	basket
b.	bought	string	toast	milk
c.	bought	supper	box	milk
d.	bought	barn	bow	ball

LEVEL III /k/-/g/-/ng/-/j/-/y/-/h/

/k/	toaster	pack	toaster	toaster
a.	toaster	pack	supper	summer
b.	cut	pack	see	come
c.	cut	pack	see	pan
d.	pass	pack	pat	pan

/g/	bucket	dog	bucket	bucket
a.	bucket	dog	telephone	rattle
b.	hair	dog	pen	coat
c.	boat	dog	car	doll
d.	doll	dog	dot	dock

LEVEL IV /f/-/v/-/th/-/sh/-/zh/-/j/-/ch/-/s/-/z/-/l/-/r/

/s/	bubble	bubble	Sis	bubble
a.	bubble	slipper	Sis	bottle
b.	box	glass	Sis	car
c.	sit	box	Sis	glass
d.	sit	sick	Sis	sing

/j/	matches	cage	matches	matches
a.	matches	cage	crayon	paintbrush
b.	dress	cage	desk	cup
c.	dress	cage	desk	cane
d.	cave	cage	case	cape

/th/	pencil	pencil	bath	pencil
a.	pencil	pocketbook	bath	glasses
b.	toy	book	bath	store
c.	game	bad	bath	run
d.	bat	bad	bath	base

C. INFORMAL LANGUAGE FORMULATION ACTIVITIES

The teacher can effectively use informal classroom activities to stimulate language formulation. First, she consciously provides a good language formulation model for the children by carefully constructing her own language. Second, she helps children increase their language formulation skills by expanding their own spontaneous utterances.

The Teacher as a Language Model:

To provide a good language model for the children, the teacher should examine her own language on two dimensions in addition to the articulation patterns basic to children's auditory discrimination important to Section B. First, she must assess the conceptual level of her language and fit it to the children's conceptual level and their ability to comprehend. Second, she must assess the complexity of her language constructions as well as the length and amount of information included in a series which she asks children to process and act upon.

The complexity of the teacher's language should be determined by the children's level of functioning. Generally, she should try to gear most of her language just one step above the present language formulation level of the group. This provides the children with the model for the next step in their language construction and stimulates them to imitate this level. Since the children may have difficulty immediately comprehending this level of information, the teacher must also break down complex sentences into simpler units. Generally, some repetition of her verbalization may be necessary if the teacher is to try to provide a good language model as well as insure that the children comprehend the information adequately.

The teacher needs to be aware of these two different roles her language plays in the classroom situation so that she doesn't fall into some common traps. Some teachers tend to simplify their language to the point where the children can always understand what is said. This is certainly desirable in terms of comprehension; however, one must keep in mind the necessity of providing the language model to stimulate language development as well. Other teachers maintain a complex level of language which the children do not always comprehend and repeat it in this same form, rather than breaking it down into simpler units which allows the children to understand more effectively.

A compromise between these two approaches usually provides both the language stimulation and allows the comprehension process to be completed. For example, if the teacher gives too much information at one step, such as a three or four level command, it is easy to break these commands down into one or two level commands for the child to follow. Further, the teacher can make her language less complex. For instance if she says "After we eat a snack, we'll have a story" she could break this down into "First we'll have snack and....then we'll read our story" pausing between the two parts of the compound sentence. See Section A on Stimulating the Understanding of Verbal Material in Sequence for further discussion of breaking down and/or reformulating language to make it easily comprehended.

Another important aspect of providing a good language model, is giving the child immediate feedback of his own verbalization by reformulating his ideas and sentences into more appropriate forms. This should be done incidentally and the teacher should not draw attention to the fact that the child has formulated an inappropriate sentence or used an overly primitive construction. She feeds back to the child in a way that does not necessitate asking him to repeat her reformulation.

Many teachers and parents find themselves giving children this kind of feedback automatically. Often times, the teacher will formulate a child's thoughts aloud for him in order to make sure that she has understood what he is trying to convey. She then judges, by his response, that she was accurate in comprehending him. If she uses this occasion to reformulate his idea in a language construction one step above the one he gave, this gives her the opportunity to also provide him with a good language model to draw on the next time he formulates a similar thought. Thus, the teacher can add to her effectiveness in this automatic activity by making it a conscious act of providing a better language model.

Further, she can emphasize some of the differences between her construction and the child's by emphasizing the words that he omitted or the phrasing that was different from the way that he expressed it. For example, the child might say, "Afternoon, I go to Bobby's house" and the teacher might reformulate "In the afternoon, you're going to Bobby's house" or say to another child, "Bobby says, in the afternoon, he's going to your house."

Through this process, the teacher is giving the child immediate feedback of the content of his verbalizations as well as the formulation of them. She should also correct inappropriate labels by providing the child with the more appropriate ones at the same time that she reformulates the sentence and word configurations. For example, if Johnnie arrives at school in a red shirt and says it is blue, she should reformulate his language construction, correcting the language model.

These general principles can also be applied to aid articulation development. By repeating what the child says, using the correct articulation patterns and emphasizing the change but not asking him to repeat correctly, the teacher is providing the correct articulation for the child to retrieve the next time he says that word or sentence.

Precise articulation develops through the child gradually approximating the correct pattern. The more times he hears the correct pattern immediately following his own attempts, the more quickly he will make the necessary adjustments in his own articulation. Again the child should not necessarily be required to repeat the word or phrase correctly. Often he will do this spontaneously; however, the main purpose is to provide him with a correct and slightly challenging model.

Language Formulation Expansion

During class, children will frequently bring up topics that are familiar to them or in which they have specific interest. Capitalizing on this child-initiated language is one of the most effective tools the teacher has for enhancing language formulation development. For example, a child may indicate that he has a specific piece of information to offer, something about occurance at home or a new toy, etc. The teacher's role at this time is to aid him in expanding this information through indicating what other pieces of information are also applicable.

In either informal or formal situations, the teacher can prompt the child by providing an open-ended question. For example, "Can you tell us something about the toy?" Then she can prompt the child with "What else can you tell us about the toy?" and find out how much information the child is able to give spontaneously. Then she might further prompt him with specific questions to help him discover that he has more information to convey. To do this, she might ask specific questions pertaining to the topic and aid him to formulate appropriate answers. For example, if the child had received a new toy, the teacher might ask any or all of the following questions. "Who gave it to you?" "Did you buy it yourself?" "Where did you get it?" "What can you do with the toy?" "Do you play by yourself?" "Do your friends play with you?" "What color is it?" "How big is it?" "What shape is it?" "Do any of you other children have a similar toy?" (thereby drawing other children into the conversation). Concomitantly, any one of the above topics could be expanded. For example, if the child went to the store to purchase it himself, the teacher might prompt expansion by asking "Who went with you?", "When did you go?", "How did you go?", "Do you go often?"

Thus the child has given the teacher an opportunity to capitalize on his own language in teaching him to use language more efficiently. Through this kind of prompting, she helps him learn the effectiveness of language as a means of communicating his ideas. Further, she helps make the child's communication a success by helping him organize his thoughts about a particular subject and formulate them in language structure that transmits the ideas to his listeners.

D. STIMULATING LANGUAGE FORMULATION DEVELOPMENT

The teacher uses two basic types of formal classroom activities to stimulate language formulation development. The first involves the teacher presenting particular content and then asking the children to discuss it. These activities fall under a broad definition of Story Time. However, any materials around which a teacher organizes a discussion can be used, i.e. sets of objects or pictures, a particular book, or even a particular experience such as a field trip. In these activities, the children are asked to comprehend a certain amount of information and then formulate language to discuss it. The second broad class of activities which stimulate language formulation is learning repetitive language forms, i.e. songs, poems, finger plays, and games that have a specific and repeated verbal content.

How each type of activity can be used to foster language formulation development systematically is discussed in detail in the following two sections. First, however, a general discussion of teaching strategies is presented. This outlines the procedural steps the teacher can take the children through to assure adequate learning of the material presented so that the children can use it in formulating language responses.

Teaching Strategies

In using the test-teach-test-exit model discussed earlier, the teacher coordinates both informal and formal classroom activities around the particular content or concepts she wishes to teach. For example, if she wishes to introduce the concept of "big" and "little" to the children and make the understanding of and labels for these concepts functional so that the children can retrieve and use them in language formulation activities, she organizes her classroom situation to teach this concept.

First, she exposes the children to the use of these words as labels appropriate to objects and people in the classroom during informal activities. It is certainly easy to bring up such concepts during snack time or during the initial or final periods of the day. These spontaneous sessions can easily be modified to include examples of such content. This provides her an initial testing situation, i. e. Do the children know this concept at all? It also functions as a familiarization period which gives the children background information about the concept which they can use later in the formal teaching activities.

Secondly, the formal activities, i. e. circle games, songs, cutting and pasting activities, etc. can also be oriented around this concept. For example, the children could cut and paste big and little circles during the visual-perceptual-motor art session. They could play a circle game with poems or songs which have the concepts of big and little, i. e. "Simon Says make yourself big", "Simon Says make yourself little." In circle games, songs about making the circle big, making the circle little, etc. could be used. In body awareness and control activities, the children could also practice making themselves little and making themselves big, they could get in big barrels and little barrels, big boxes and little boxes. In other words, the teacher points out anything in the classroom that is big or little and begins giving the children experience with this label as a useful part of their daily routine.

After the children have had a certain amount of familiarization with the concept, the teacher introduces it in formal language situations. Teaching the concept in the formal language situation also involves several steps. The first is a formal familiarization session. Using any materials that demonstrate the concepts visually or motorically, the teacher begins teaching the association necessary for establishing the children's understanding of the label. As a next step, the teacher asks the children to identify the concept label. For example, holding up a picture used in the formal familiarization session, she asks "Find the one that is big." In this case, she has already used the verbal label with this particular picture; now she is asking them to demonstrate their understanding of the label. Once the children are successful in identifying (recognizing) the label, she can than ask them to name it: for example, "This chair is little, and this chair is ________" asking the children to provide the label themselves.

Once the children demonstrate ability to name in response to concrete or representational stimuli related to the concept label, the teacher gives them practice in generalizing this label to a number of pictures or objects or functions that it represents. In this way, she provides the children with many experiences in which this particular label is appropriate. To do this, she presents a number of situations in which the label can apply. For example, if she had taught the children the word "chair" in response to a chair in the classroom, she gives them much more practice with the label by pointing out other chairs in the classroom, bringing in pictures of different kinds of chairs, (i.e. a straight wooden chair, an arm chair, a rocking chair, etc.) to give the idea that the label "chair" stands for a whole class of objects and not merely this particular chair.

If the teacher gives sufficient experience with this generalization activity, then the children should be able to go on and retrieve this label in response to other stimuli in the formal teaching situation. By testing the functional use of this label in the formal situation, the teacher is at the second testing phase of the test-teach-test-exit model. Before she can exit, she must test whether the label is really a functional tool for the child. To do this, she takes it out of the formal language situation and back into informal activities by providing specific situations which give the children an opportunity to recall the concept label. This tests whether the label is a functional part of the children's vocabulary. If the concept label is still unstable, she can prompt it here and help them use it effectively. If it is already in functional use in the children's vocabulary, this gives them a chance to use it and have it reinforced as a tool for conveying information.

This brings up the principle of practice in generalization which is an important part of the teaching situation that is often overlooked. One should not assume that because children can produce a label in formal teaching situations that they automatically have the skill to use it. It is often a shock to note that children cannot recall or retrieve this information when the appropriate situation arises. This is the real test of whether the label is understood.

The teacher can use both the informal and formal situations to help the children learn to generalize the label. Here she uses all the prompting techniques discussed earlier, but she does so in a particular sequence. For instance, if the label is "hot" or "cold", she first prompts it in a more general fashion by asking "How does it taste?" (a more abstract question). If the children can provide the label "hot" or "cold", she has taught them how to use this label. If they cannot produce it, she gives them a prompt in the form of a choice. For instance, if it is ice cream they are eating, she can say, "Is it hot?" -- thus prompting them to say, "No, it's cold." This involves the children recalling the label themselves. If they still cannot produce the label, she provides it for them by asking "Is it hot or cold", and allows them to demonstrate recognition of the appropriate label.

If the children have to be taken to the last step before they are able to use a label taught in the formal situation, it is evident that there has not been enough functional practice with this concept to make it a useful tool for the children. The teacher must provide more experience with this concept before the children will have it firmly established. Thus, she must return to the teaching phase of the test-teach-test-exit model by providing more formal experience and then retest the efficacy of the learning. She can exit (go on to another concept) when the concept label is a functional tool.

Storytime Activities

Story time involves a substantial amount of comprehension and integration of verbal information which the children are often asked to use in formulating responses. The following discussion focuses on a series of techniques the teacher can use in eliciting language formulation participation from the children, which can be carried as far as necessary to make the formulation task successful for the group or individual child. The series is presented in descending order of difficulty. The teacher should initially begin her techniques just one level above the children's ability to participate, thus challenging their development. However, she should descend far enough down the series to allow the successful participation of the children. In doing this, she fosters the language formulation development in a systematic fashion.

Initially, the teacher asks an open-ended question. For example, "What happened in the story?", and then "Can you tell me more?" The teacher then capitalizes on what the children can give her and gears further questions or verbal prompting of language formulation to the appropriate level. By this prompting, she helps the children formulate more information and then monitors their attempts. Again she uses the verbal prompting techniques described earlier to help children retrieve the vocabulary or appropriate sentence formulation. She also provides the correct models by reformulating the child-initiated attempts in language one step higher.

In order for the teacher to gear her questions or her prompting to each child's appropriate level, she has to evaluate what he is able to give spontaneously and then select the appropriate question. To illustrate the series or sequence of questions she might ask, we will assume that the child was unable to respond to her initial open-ended stimulation technique. She begins by asking the elementary "what" or "who" questions. If the children can answer these, she might go on to ask "where" and "when" questions. At the next level, the content of the story material dictates whether the "how" or "why" question is more difficult. If these questions require responses that have been represented pictorally, they are often less difficult. However, if the question requires that the child integrate a sequence of pictures or draw on information that is not specifically stated in the story, then, of course, they are very difficult. The teacher will frequently have to help the children with these questions by breaking them down into parts and perhaps also by giving examples.

The teacher might also employ opposites or verbal absurdities prompting techniques at this point. For example, she might give the child the opposite information to what is required, i. e. she might say "the boy put on his raincoat because the sun is shining." This technique gives the children the set within which they are to respond, i. e. rainy, sunny, cloudy, windy. In this way, the teacher has narrowed down the possible alternative response and makes the retrieval process less difficult for the child. To do this, she eliminates the possibility that the boy was putting on his coat because he was going to school or wanted to go out and play. If the children are unable to respond appropriately here, she might provide them with the inappropriate label as well as the appropriate one to see if they can then select the correct one, i. e. "Did the boy put on his raincoat because it was sunny or rainy?" Once the children are able to provide the appropriate label, the teacher then reformulates it within the sentence structure she ultimately hopes to have them produce to give the children the language model.

Often she provides a sentence construction which allows the children to fill in the label as the last word. In this technique, the teacher ultimately hopes to have the child speak in appropriately formulated sentences. However, she should be aware of the fact that language constructions can also become artificial for the children, i. e. she may change the intonation pattern and the rate of production so that her language draws attention to itself in an artificial way. Therefore, while the teacher attempts to provide a good language model for the children by emphasizing certain sounds or words, she doesn't want to have the children imitate her in a similar fashion. She should attempt to keep her exaggerations or emphasis as close to conversational speech patterns as possible to avoid this artificiality from creeping into the language lesson.

Some language teaching approaches formalize routine practice with specific language forms (notably Bereiter and Engelman, 1966). One danger in this is that the language forms may tend to become artificial for the child and sound out of place in his general language productions. However, the sequence of sentence formulation that Bereiter and Engelman attempt to take their children through is a valuable reference for the teacher in helping to provide language experiences for children. Thus, while we disagree to some extent with outcome of their teaching method and their rationale for limiting their program to these formalized lessons, the background information they provide is a useful reference for the sequences in the development of language formulation.

The above discussion is based on reading a story to the children. However, the same principles can be used in presenting objects and pictures in sequence for stimulating language formulation. Single objects and pictures can be used effectively for children whose limited auditory attention and/or concentration limits the effectiveness of story reading for them. Objects and pictures are usually used together, one to fortify the other, as the objects tend to be more concrete than the pictures and can be used to add to the child's association patterns of what is involved in the picture. The following sequence suggests how the teacher can present objects and pictures in an orderly sequence which will elicit certain types of language formulation from children.

Single Pictures. Many pictures such as those available in the Peabody Language Development Kits, Level P and Level [illegible], can be presented to the children to elicit labelling. The teacher can expand on the child's labelling by asking him to label the function of the object, certain qualities about the object, what or where it might be found, and the category into which it might fall. The teacher can take this to a higher level through the same procedure described in expanding child-initiated language.

At the second level, the teacher can present the children with simple action pictures pertaining to his home environment or a daily activity. For example, Health and Cleanliness Teaching Pictures published by David C. Cook, Elgin, Illinois, 60120, 1966, No. A1530 DCC198. Again, the teacher would go through the procedure of asking what is happening in the picture and then asking the children to expand on this, either independently or through appropriate prompting.

Also available from the David C. Cook Publishing Company is the group of teaching pictures Food and Nutrition, No. A1532, DCC198. These pictures are useful because they represent activities with which children are familiar and which they encounter daily. They involve a single action which is well-depicted and does not contain much extraneous background activity. Another set of pictures which is useful is What We Do Day By Day, Guide For the Teacher, by Nina Jacob and Mary Elizabeth Keister (available from the National Dairy Council, Chicago, Illinois, 60606). These pictures, likewise, depict daily activities which the child encounters and again represent single actions. This level of pictures elicits naming and labelling of simple actions and can be used primarily for vocabulary building of this type and open-ended stimulation of what is happening. "What" and "who" questions can be employed with them. Although these pictures can be used at higher levels, they are most effective in eliciting the simpler levels of expressive language. Presumably they could also be presented in series and used for pulling the higher level "where", "when", "why" and "how" questions.

A set of pictures on the third level is included in the book My School Book of Picture Stories by Eleanor Mill, A Kinder Owl Book published by Holt, Rinehart and Winston, Inc., New York, 1967. These pictures depict situations which the child might encounter in a school situation. Whereas the other sets of pictures generally involve only one or two children performing the same activity, the pictures in this book show several children involved in a variety of activities and situations. Thus, the children must integrate the various elements of the picture in order to tell about what is happening.

The large pictures available in the Peabody Language Development Kit, Level 1 and Level P, require an even more complex integration of the elements than My School Book of Picture Stories. For example, in the pictures available in the Peabody Language Kit, Level 1, the children may be able to name some of the simple actions and integrate one or two figures without understanding the concept conveyed by the pictures. These latter pictures can be used to elicit naming of people, objects or simple actions or they can be used to stimulate language which requires integrating actions occuring simultaneously. This more complex information requires higher levels of language integration from the children. Thus, they elicit verbal responses at a slightly more complex sentence formulation and vocabulary level. They can be used as an effective focus for the teacher's "where", "when", "how" and "why" questions, and help the children verbalize from a simple single stimulus about past or future events.

At a fourth level, the teacher might use sequence picture story materials. These can be employed to elicit organized and continuous language formulations that recapitulate events in sequence. In presenting sequence picture materials, the teacher follows this procedure. First, she examines the pictures and constructs one simple sentence to describe the activity in each of the pictures. She then presents the pictures to the children, one at a time, in the appropriate sequence, giving them the one sentence that goes with the particular picture. At this point she should make liberal use of marker phrases such as "and then", or "next", or "what's going to happen?" or "after that", etc. The next step involves the teacher telling the story again using the same sentences and asking the children to indicate each picture as it is being verbally described. Next, the teacher points to each picture and asks the children to give the verbal description that goes with the picture. Then the teacher presents the first picture. She gives the children the other series pictures and lets them order the pictures. One child puts up each picture and gives the appropriate sentence as he puts it up. The final step involves the children independently taking the pictures out of the box and arranging them in appropriate order, while telling the story.

As a final check on the children's learning efficiency, the teacher might put up the pictures in the wrong order to see if the children can recognize the error and correct it. This is a type of absurdity task which forces the child to attend closely to the sequence elements. For further refinement of this technique, one child could scramble the sequence stories for another child to recorrect.

When presenting sequence pictures, emphasis on the left to right orientation is very important. The teacher does not use the words left to right but has marked her flannel board or picture board with a starting and ending point (perhaps a star or some other visual representation emphasizing that the story always starts at the left and ends at the right). Many of the commercially-prepared materials do not place the pictures in a single line but rather place them in 2 rows in a frame which is much more difficult and misleading for the children. For this reason, the teacher may want to use a flannel board or some other means of arranging the pictures in a horizontal line until the children are well able to handle the sequence problem. The teacher makes sure the children discuss the pictures in proper verbal sequence as well as placing them in a proper spatial order.

There are many sequence picture materials that can be used for this activity. Some teachers like to put together their own sets; however, there are some good commercial sequence pictures that can be used in the classroom. The following discussion of commercially available pictures orders these sets according to their difficulty level.

One set of easy sequence pictures is Sequence Pictures by Laurel Rogan, Ph. D. and Charlotte Larson, M. A., distributed by the Developmental Learning Materials, 3505 North Ashland Avenue, Chicago, Illinois, 1968. Although the pictoral representations are quite small, the activities shown are at a relatively low level and might be good for introducing this type of activity. The number of pictures does not exceed six and the teacher might delete one or two if it is difficult for the children to handle this number of pictures in sequence.

A similar type of material is available from the Ideal School Supply Company, Brooklawn, Illinois, 60453. It is called Sequence Pictures for Pegboard, No. 271-3, 1964. The content of this picture series is somewhat higher conceptually. The stories are longer and a great deal of necessary story information is not contained within the pictures themselves. Utilization of these pictures within the classroom during language period should occur only after the children are able to handle this type of material effectively and can conceptualize and verbally fill-in what is not depicted.

See-Quees Sequence Story Board by Judy Company, Minneapolis, Minnesota. These sequence stories are available with four, six or 12 pictures. Series 4 presents nursery rhymes which, of course, can be presented in sequence with the pictures used to emphasize the sequence in the rhyme. Series 6 appears to involve a number of sequence pictures centered around topics like the growth of a flower and the activities of a squirrel. Series 12 presents many of the stories that emphasize already familiar story sequences, like Bill Goat's Gruff, Three Pigs, Ginger Bread Boy, etc., and provides useful pictures to emphasize the sequence. These particular sets have good pictures for children who have difficulty with visual processing. The pictures are very clear, highly colored and do not have a lot of extraneous detail.

In Instructor Activity Kit entitled Let's Learn Sequence, order No. 1015, 1966, Instructor Products Company, Philadelphia, Pennsylvania, 19131. This series follows the same principle as the Judy pictures mentioned above; however, their pictures are far more difficult to use. The pictures are busy visually and, therefore, may be distracting to some children. However, depending on the level of the group, they might be a useful material to consider particularly when the children can handle more pictures and can use the extra material in the pictures to elaborate verbally on the sequence of the activities.

Repetitive Verbal Material.

Repetitive verbal materials such as songs and poems vary from the Story Time formulation activities because they require that the children recall specific verbal material rather than allowing them to formulate and convey information through their own sentence constructions. In the songs and poems, the verbalizations are specified by the teacher and require that the children use rote recall skills. As a language pattern itself, the children must hear, attend, discriminate and, to some extent, understand the language pattern to reproduce it in its entirety. These particular activities present a different language task than most of the other activities so far discussed, but evidence of difficulty in language formulation is often reflected when children try to learn a song or a poem that has a new language structure beyond what they can handle. The children will often make some primitive substitutions of vocabulary, morphological level, and verb tense by using a language form that is on their own level rather than the one actually present in the song, story or poem. For example, if a child has difficulty in changing verb tenses, he may apply these inappropriately within the song or poem.

The teacher uses these activities primarily to teach children the comprehension, memory, recall and reproduction patterns in language on a rote basis. Songs and poems have many different properties which either facilitate or interfere with the language functions or the memory activities involved in this process. If the poem or song is long and has a great deal of verbalization, it is harder to learn just on a rote recall basis. However, children can often use other skills or cues inherent in the song or poem to help aid their memory. These cues come from the sequence of the actions in the poem, the rhyme of the poem or song, how much the rhyming activity helps aid the memory, and from the content or concepts involved. Whether the verses have a relationship to each other in the way they are presented in the song or poem also makes a great deal of difference in the task of memory and recall. Similarly, the rhythm involved in poems and songs appears to be a very important element and allows concepts or labels to be incorporated in a way that aids the child in making many associational patterns (the crux of the familiarization period described earlier).

Obviously, songs and poems are good motivating devices for children. They capture the children's attention and hold it while the material is being given. They also provide practice for children in remembering specific language forms in a pattern. If children learn to reproduce these patterns within the song or poem, they build up a repertoire of experience to call on when asked to reproduce similar forms in their own language constructions. When the language forms are rhythmic, this induces the children's formulations to be of the same length and of the same pattern. This, in turn, reduces some of the complexity of normal speech formulations which can vary in rhythm length and complexity and yet follow one after another. These factors make it easy for children to learn and reproduce these sequenced language forms in songs and poems. Thus, the teacher can use these activities as a tool in stimulating language formulation development.

To use these activities to stimulate language development, the teacher can present the following series of activities and accompanying procedures for introducing songs and poems. The procedures facilitate the children's ability to remember and reproduce these songs and poems themselves. For example, the teacher initially introduces songs and poems that have gestures and actions which accompany them because these provide memory aids for the children, make the activity more interesting, and keep their attention focused on the song or poem.

The first step in the procedure for introducing such a song or poem is to familiarize the children with the entire verse and its accompanying actions. To do this, the teacher sings the song or says the poem with the actions two or three times for the children so that they get the whole idea. This corresponds to the familiarization or exposure steps described above.

Next the teacher encourages the children to do the motor action while she is singing and demonstrating (many children do this spontaneously). Performing the action helps the children comprehend some of the information included in the songs and poems and strengthens the association patterns. When the children are able to produce the actions at the appropriate point in the song without the teacher demonstrating, it indicates that they comprehend some of the language involved in the poem or song.

The teacher then begins to encourage the children to engage in the expressive language activity of the song. Many children will begin to spontaneously sing along in parts they know. However, to encourage children to do this, the teacher follows the same pattern which children employ in spontaneously remembering songs or poems. Children appear to initially learn the last words or phrases in lines, particularly the last rhyming word. They also learn any of the lines that are repeated frequently throughout the song. Thus, when the teacher begins to encourage language participation, these are the parts of the poem or song which she prompts the children to give her first. For example, the teacher continues singing the song herself but leaves off the last word in a line and, by her actions or gestures, indicates that the children are to fill in the missing word to complete the song. Once the children get this idea of filling in the phrase, the teacher gradually leaves more and more for them to fill in. She does this in sequence starting with prompting the children to fill in the last word, then the last phrase, and finally the entire last line when she gives only its first word. She continues following this process of cue reduction until the child is able to initiate the song with minimal aids.

Finally, the teacher withdraws all cues and ask the child to call up the rhythm as well as the words. If she is able to play the piano, she should continue to do so; however, with a decreased loudness level. If she must sing because a piano is unavailable, she should decrease the loudness of her singing so that it is only the rhythm that is giving the child the cues rather than the words per se. Asking the child to call up the rhythm and the words increases the complexity markedly.

Some teachers or therapists might approach this task by introducing single lines and asking the children to learn these line by line. The above approach teaches the gestalt of the song which allows the children to grasp the entire concept so they can use their conceptual abilities to aid their memory. Teaching only one line at a time asks the children to develop rote memory skills in recalling meaningless words and is less effective in stimulating language formulation skills.

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